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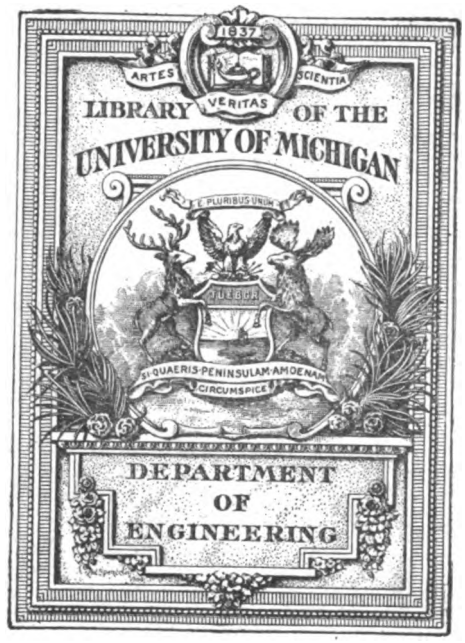
University of Michigan - BUHR



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GENERAL LIBRARY.

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9082

The Smallest Magneto Telephone

DIMENSIONS.

Width	5 inches
Depth	4 inches
Height	7¼ inches

The Wesco Long Distance Residence Telephone Model No. 51 is the smallest and most compact Magneto Telephone made.

It is especially designed for use in residences where wall space is limited and where ornamental design and beauty of finish are as essential as the efficiency of the working parts.

It is equipped with our Standard Receiver, Hook-Switch, Long Distance Solid back Transmitter, 80 ohm ringer and 3-bar Generator, each part being the best that money can buy. It is also made with 4-bar Bridging Generator with 1,000, 1,600 and 2,000 ohm ringer movement.

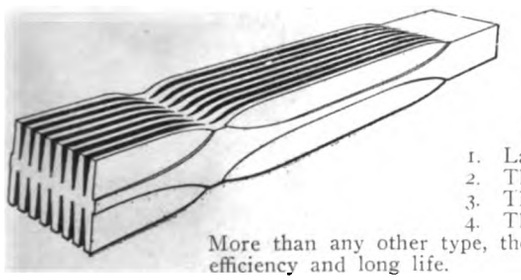
Write for General Telephone Supply Catalog and our monthly net price list.

"EVERYTHING ELECTRICAL"

THE WESCO SUPPLY COMPANY

Branch Warehouse:
Ft. Worth, Texas

St. Louis, Missouri



Gould Plate Construction

The following points are clearly brought out in the accompanying illustration of a fragment of the Gould Plate.

1. Large contact surface for active material.
2. The ribbed surface developed by our "spinning" process.
3. The central web of conducting lead.
4. The current-distributing cross bars.

More than any other type, the Gould Plate fulfils every scientific requirement for economy, efficiency and long life. It will pay you to investigate. Bulletin upon request.

SALES OFFICES
Boston—60 State St.
Chicago—Rookery Bldg.
San Francisco—Monadnock Building.
Toronto, Ont.—62 Wellington St., West.

Gould Storage Battery Co.

MAIN OFFICES
1 West 34th St.,
New York City.
Works, Depew, N. Y.

JUST A SUGGESTION

Take one of your busy 4-party lines and equip it with "POOLE" Lock-Outs. Leave it in service a month and then see how many of the four will stand a raise of $3.00 a year rather than go back to the old way. We know the answer, but we want your subscribers to impress on you the fact that the "POOLE" Lock-Out is a rate-raiser.

It won't cost you anything to try it, because we will loan you the Lock-Outs free and there is no other equipment required. Write today for our Booklet AL-2.

Mountain State Electrical Company

WHEELING, W. VA.

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DEAN TELEPHONE APPARATUS

During the THREE YEARS that THE DEAN ELECTRIC COMPANY has been in existence, over FORTY (40) Complete Common Battery Switchboards have been installed, or are in process of construction; this in addition to our extensive private branch exchange, magneto switchboard and phenomenal telephone business. Does this record appeal to you? If so, visit our exhibit at the Electrical Trades Exposition, Chicago, January 14th to 26th, 1907, and we will show you why these results have been obtained.

BRANCH OFFICES:

WATER WORKS BUILDING, KANSAS CITY, MO.

542 BYRNE BUILDING, LOS ANGELES, CAL.

FACTORY AND GENERAL OFFICE:

Elyria, Ohio.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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Let Them Rubber They Kan't Kripple Survis

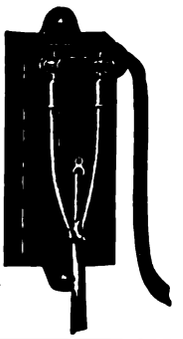
They don't like telephones if they kant "Lissen In"

ANDRAE MILWAUKEE

The only true and praktikal solusion of the Rubbering problem is

Andrae's New Condenser

One party can call another or ring central no matter how meny resevers are down. The expense is trifling. A boy kan put them on and they need no attention. Nuthing to get out uv order, the instruments talk better and always ring. Even Transmission is not affected by "Lissening In."



RITE FOR A SET ON TRIAL.

Julius Andrae & Sons Co., Milwaukee, Wis.

99 W. WATER ST.

You Wouldn't Start a Horse Car Line

in this age of electric cars? Not if you wanted to make money out of the business of transportation.

Then why should you start a manual telephone exchange in this age of automatics, if you want to make money out of the telephone business?

The automatic system of telephony bears the same relation to the manual system that the electric car does to the horse car. It is the apotheosis of telephone development, as the electric car is of transportation development.

The automatic telephone system produces the best service more economically than indifferent service can be produced with manual equipment.

There is no more question as to the relative popularity of the automatic and manual telephone service where the two kinds are in competition than there is as to the relative popularity of the trolley car and the horse car.

And, as for the securities—the same comparison may be applied with the same results.

Our Automatic system has been adopted in the following cities:

Aberdeen, S. D.	Clayton, Mo.	Jonesboro, Ark.	Ocean Park, Cal.	Springfield, Mo.
Akron, Ohio.	Cleburne, Texas.	Lake Benton, Minn.	Pentwater, Mich.	St. Marys, Ohio.
Albuquerque, N. M.	Columbus, Ga.	Lewiston, Me.	Portland, Me.	Tacoma, Wash.
Allentown, Pa.	Columbus, Ohio.	Lincoln, Neb.	Portland, Ore.	Toronto Jct., Can.
Auburn, Me.	Dayton, Ohio.	Los Angeles, Cal.	Princeton, N. J.	Traverse City, Mich.
Auburn, N. Y.	El Paso, Texas.	Manchester, Iowa.	Richmond, Ind.	Urbana, Ill.
Battle Creek, Mich.	Fall River, Mass.	Marianao, Cuba.	Riverside, Cal.	Van Wert, Ohio.
Bellingham, Wash.	Ferguson, Mo.	Marion, Ind.	San Diego, Cal.	Walla Walla, Wash.
Berlin, Germany.	Grand Rapids, Mich.	Medford, Wis.	San Francisco, Cal.	Watch Hill, R. I.
Buxton, Iowa.	Hastings, Neb.	Miamisburg, Ohio.	Santa Monica, Cal.	Wausau, Wis.
Cadillac, Mich.	Havana, Cuba.	Mount Olive, Ill.	Sioux City, Iowa.	Westerly, R. I.
Champaign, Ill.	Hazleton, Pa.	New Bedford, Mass.	South Bend, Ind.	Wilmington, Del.
Chicago, Ill.	Hopkinsville, Ky.	Oakland, Cal.	Spokane, Wash.	Woodstock, N. B., Canada.

AUTOMATIC ELECTRIC COMPANY, VAN BUREN and MORGAN STS. CHICAGO U. S. A.

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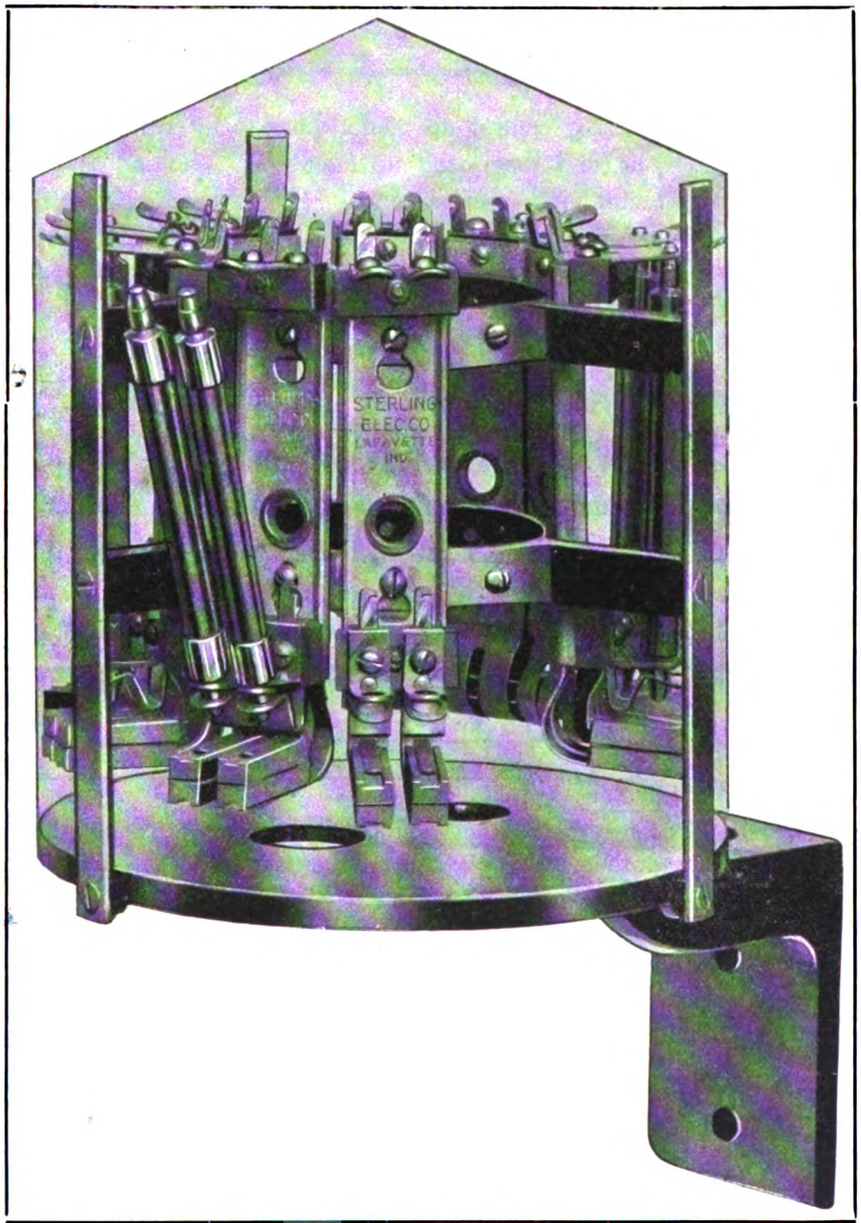
Picture Puzzle

FIND THE SMALLEST AND BEST CABLE TERMINAL ON EARTH

Buy the iron frame with galvanized cover, and get the protection in unit or pairs as required.



IT'S A SNAP. The Fuses are our well-known type of "Snap in" easy-to-take-out kind.

Made with or without carbons. Ten pairs and up.

Note how the units are mounted on the iron frame.

1/2 Actual Size. THINK OF IT.

1/2 Actual Size. THINK OF IT.

EASY, ISN'T IT?

Write us and we will tell you *how easy* it is to handle your cable work with this (unit) type terminal.

Makers of Good Goods **STERLING ELECTRIC CO.** LA FAYETTE, IND.

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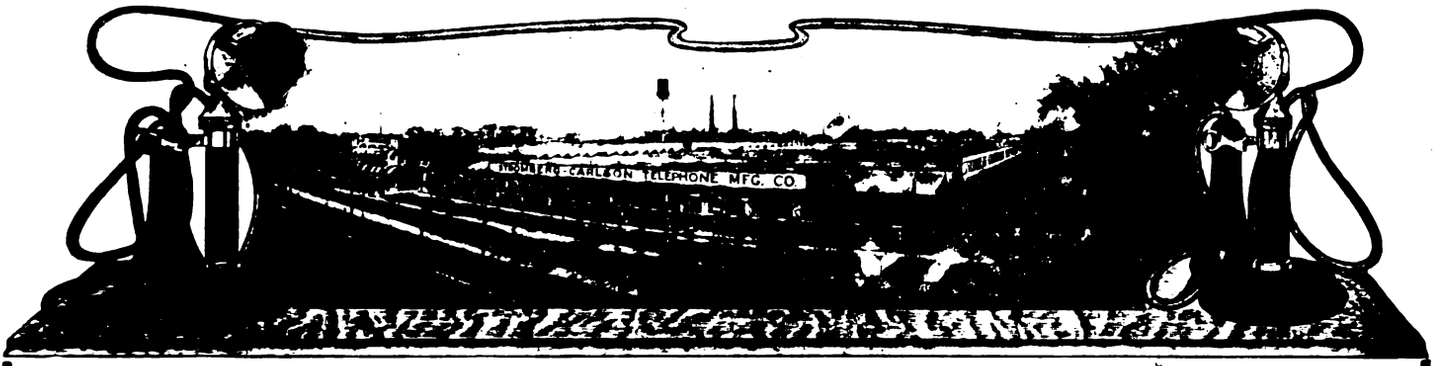
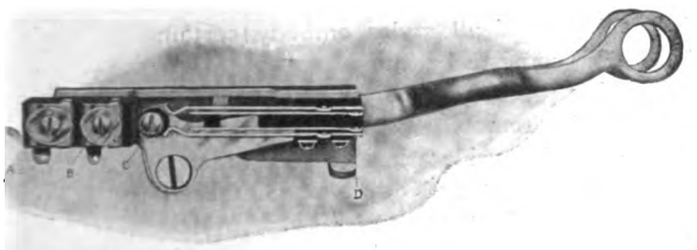
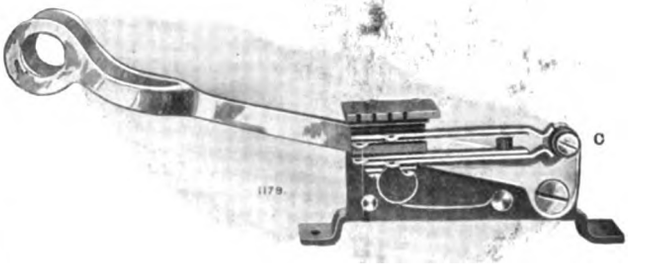


Stromberg-Carlson Efficiency and Durability are well and favorably known. The accompanying illustrations show two styles of Hook-switches, which for simplicity and mechanical construction are characteristic of Stromberg-Carlson Apparatus.



The movement of the hook downward causes the hard rubber insulated pin (C) to be drawn in between the German Silver springs, thus breaking contact, while the upward movement of the hook allows them to come together and close the circuit. The very best of materials only are used. Thorough reliability and the highest efficiency are guaranteed. Manufacturers of Telephones and Switchboards of the highest grade for all classes of service.



If you will mention your requirements and this advertisement, descriptive bulletins will be mailed free.

STROMBERG-CARLSON TELEPHONE MFG. CO.

ROCHESTER, N. Y. CHICAGO, ILL.

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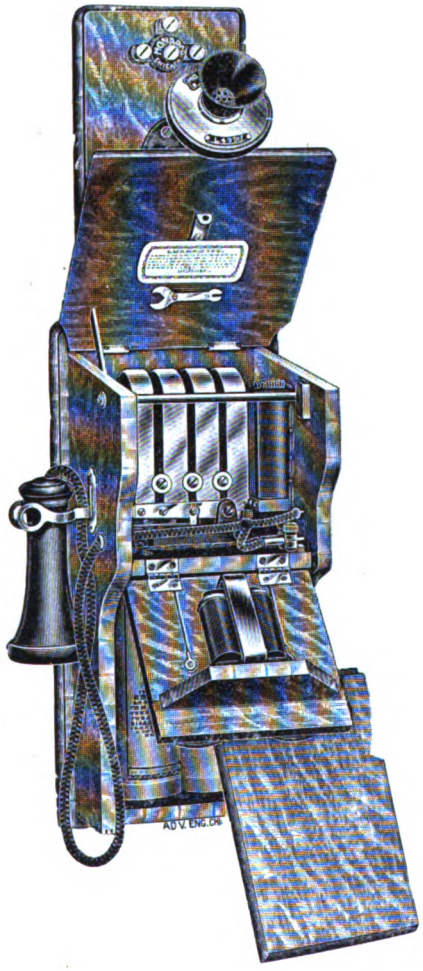
MONARCH



"Characteristics"

Monarch Telephones of all styles embody certain features which have come to be known as the "Monarch Characteristics." Perfect mechanical construction is the first and foremost. Every little detail is given the most careful consideration and the finished parts are naturally efficient and durable. Simplicity is another very desirable feature and is always noticeable in Monarch products. Convenience of assembly is given its share of study and consideration, with the result that every part can be removed easily and quickly.

The removable shelf in the telephone and the removable drop coil in the switchboard are two examples of this characteristic. Little appliances and conveniences to save time and annoyance are sought and when found are embodied in the apparatus. The gong damper on the compact telephone is one of these, which is appreciated by subscriber as well as operator.

There is a reason why Monarch Apparatus gives just the service desired. Study its characteristics and the reason is apparent. Catalogues will be sent upon request.

Monarch Telephone Mfg. Co.
CHICAGO, U.S.A.

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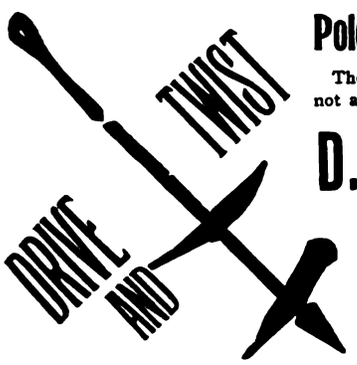


Poles Must be Anchored

The question is how to do it. Why not adopt the modern D. & T. way?

D. & T. Anchors

can be driven anywhere any time of the year. They pull against solid earth and hold as well as a dead man.

Know More About Them

THE D. & T. ANCHOR CO., La Crosse, Wis.

No. 1.

ROBINSON
Distribution Rack

For Distributing from Pole-House or Can-Top Direct to Telephone.

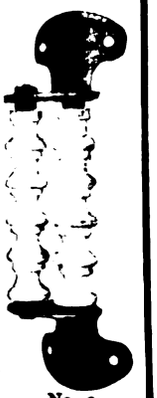
No. 1 comes in 5 to 8 pair racks.

No. 2 comes in 10 to 16 pair racks.

Send for descriptive matter and prices.

The W. G. Nagel Electric Co.

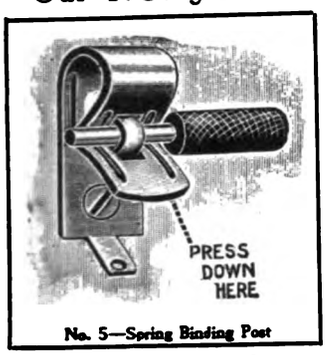
26-30 St. Clair St., TOLEDO, O.



No. 2.

EVERY wire connection in the exchange, or at the subscriber's station is better made with FAHNESTOCK SPRING BINDING POSTS than in any other way.

Our NO. 5 POST illustrated this week is fitted with a lug to which the wire is soldered. This post will take receiver cord tips or wire of equal or smaller size. It is used also for operators' transmitter cord tips, for attaching battery and ringing leads to the switchboard, and many other purposes. We will make special posts from your suggestions. Write us. The Fahnestock is the standard binding post for batteries. Write for sample and prices.



No. 5—Spring Binding Post

FAHNESTOCK ELECTRIC CO.

129 Patchen Avenue Brooklyn, N. Y.

U. S. COMBINED
Cash Register and Pay Station

[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

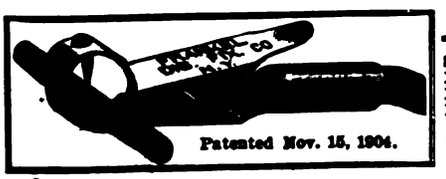
It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE
United States Coin Register Co.
TOLEDO, OHIO



Patented Nov. 15, 1904.

Sample Doz...$1.50 Dozen
Lots of 100...11.00 Hundred
Lots of 500...10.00 Hundred
Lots of 1,000. 9.00 Hundred

Your Supply House carries them. If not order direct.

FRANKEL'S TESTING CLIPS

For testing Insulated or Bare Wire Lines.
Save 15 to 30 Minutes on every Test.
Unnecessary to "skin" the wire.
Obviate "breaks" and use of Tape.

Get them for your Inspectors, Linemen and Installers.

THEY SAVE MONEY

FRANKEL DISPLAY FIXTURE CO., 740-742 Broadway, N. Y.

ORANGEBURG
FIBRE CONDUIT
For Underground Systems

Write for Catalogue.

THE FIBRE CONDUIT COMPANY,
Orangeburg, N. Y.

Boston Office, 110 State St. Chicago Office, 1780 Monadnock Bldg.

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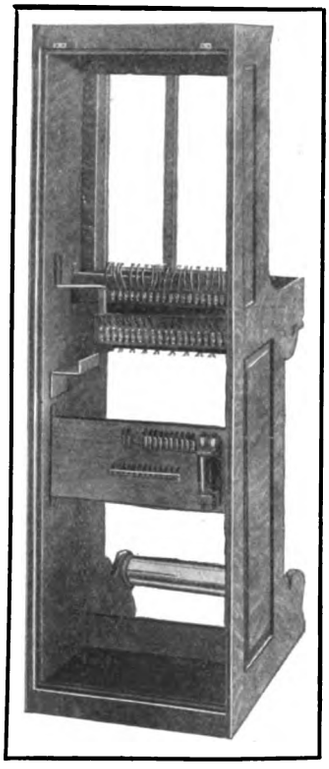
KELLOGG

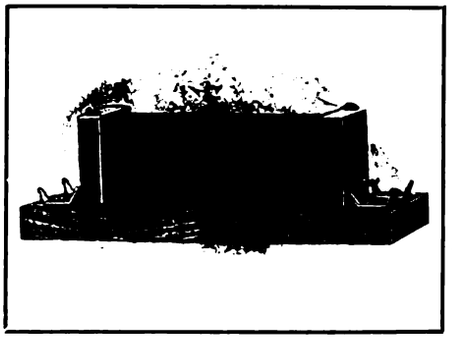
TELEPHONE APPARATUS



Magneto Switchboards

CONTAIN THE

KELLOGG INDUCTION COIL



This operator's induction coil is the result of the most careful experiments and consideration.

The size and material of this core, the ratio of the number of turns of the primary and secondary windings and the mechanical construction of this coil enable it to meet fully the most exacting requirements of both local and long distance work.

THE CORE is made up of a bundle of annealed iron wires.

THE BASE is of maple 6x2x½" with two terminals mounted at each end for the windings, one primary and one secondary lead appearing at each end.

THE SECONDARY is very highly wound, making the coil very powerful for long distance work, and also enabling the operators to talk in a low tone of voice while handling local calls. This diminishes the confusion of talking in the operating room to a minimum.

This coil should be used wherever a Kellogg transmitter is in service, in order to secure the best results.

Note the position of the induction coil in the above cut. It is easily accessible and neither interferes with nor is in the way of any other part of the apparatus in the switchboard.

Write for Bulletin "No. 9-A," which completely describes our Magneto Switchboards.

BRANCH OFFICES:

PHILADELPHIA, PA.	CLEVELAND, O.	KANSAS CITY, MO.	LOS ANGELES, CAL.
Keystone Tel. Bldg.	Electric Bldg.	1413 Main St.	318 W. Second St.

KELLOGG SWITCHBOARD & SUPPLY COMPANY
CHICAGO, ILLINOIS, U.S.A.

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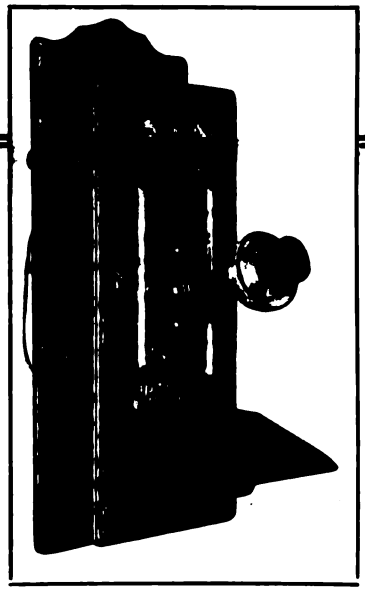
Sharpsville, Ind.,
Dec. 26, 1906.
Swedish-American Telephone Co.,
Chicago, Ill.
Gentlemen:
The 4 telephones recently shipped us have arrived and you are certainly to be complimented for making such superb instruments. The cabinets are fine and the wiring the finest I ever saw. Cutting the secondary and running the wires down for a condenser is a most happy thought. We will want some more soon.
Respectfully yours,
W. C. Turney,
Sharpsville Telephone Co.



No. 99.

No. 70.

Myrtle, Miss.,
Dec. 5, 1906.
Swedish-American Telephone Co.,
Chicago, Ill.
Gentlemen:
Replying to yours of Nov. 30th, will say that if I need any telephone goods will order from you. I am more than pleased with the goods I got from you, and I will say that I wish I had been dealing with you all the time for I believe you have the best telephone made.
Yours truly,
J. R. Johnson.

¶ You are bound to be pleased with our product. They please you because they please and satisfy your patrons. Do not contract for your 1907 telephone requirements until you get our proposition. It will prove to be decidedly interesting to you. Write us to-day.

SWEDISH-AMERICAN TELEPHONE CO., Chicago
Branch, 115 West 6th Street, Kansas City, Mo.

Chicago's Banner Booster---Second Annual

Electrical Show

JANUARY 14-26
COLISEUM, CHICAGO

Greatest of All Trade Expositions

Thirty thousand sq. ft. of exhibits embracing every branch of the electrical field and including every leading manufacturer in America. 7,500 sq. ft. devoted to the telephone interests.

SPECIAL SOUVENIR DAYS---Benj. Franklin Day, Thursday, Jan. 17; Telephone Day, Monday, Jan. 21; Thomas A. Edison Day, Wednesday, Jan. 24.

SPECIAL DATES FOR ORGANIZATIONS---Northwestern Electrical Association, Jan. 16, 17 and 18; Illuminating Engineers' Society, Jan. 17; Rejuvenated Sons of Jove, Jan. 16; American Electrical Salesmen's Association, Jan. 24.

FOR ANY OTHER INFORMATION ADDRESS

HOMER E. NIESZ, - Managing Director
Electrical Trades Exposition Co. 1006-7 Monadnock Bldg.

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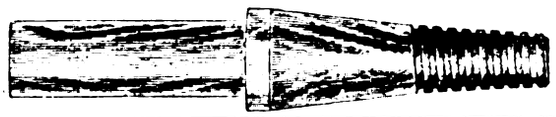
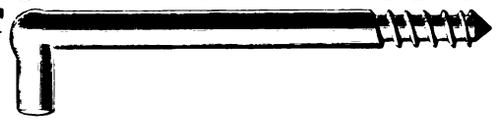
COMMERCIAL

Up Mr. Telephone Man,

Don't allow yourself to **behind**

the live ones but  **your faith**

to a STAR (not operatic, but supply house) and you

will be taking  **s in the right**

direction to save money.

Five (5) car loads—Locust, Krecose and Oak Pins for Immediate Shipment

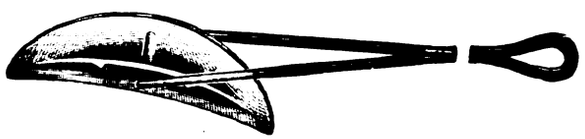
ALWAYS ASK "THE COMMERCIAL" WHEN IN A HURRY.

Commercial Electrical Supply Co., **ST. LOUIS, MO.**

COMMERCIAL

"They Never Pull Up"

THE MILLER SAFETY ANCHOR



Elmer P. Morris Co.
51 Dey Street - NEW YORK
Eastern and Export Agents

THE MILLER ANCHOR CO., Norwalk, O.

Cope's Patent Cable Rack and Conduit Rods

FOR MANHOLES, VAULTS AND DUCTS.

Cheapest, strongest and most convenient CABLE RACK made. Costs but little more than wood and is indestructible, more durable and convenient.

CONDUIT RODS are made in 3 and 4 foot lengths. Quickly coupled and uncoupled, they are the best rod on the market.

T. J. COPE *ENGINEER AND CONTRACTOR*
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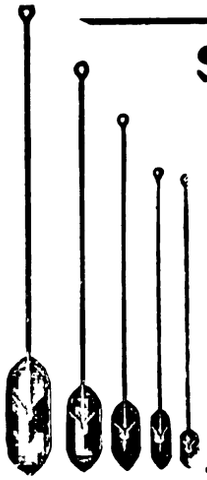

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VOLUME XV. SATURDAY JANUARY 5, 1907. NUMBER 1

Drawing in the New York-New Haven Underground Cable

By John Putnam.

(Illustrations from Photographs by the Author.)

WHILE the method of drawing in the underground cable which was recently laid between New Haven and New York City may not be particularly new, it is conceivable that a description of the work may be of some interest to telephone men, both on account of the rapidity with which it was done and the magnitude of the construction involved. Its object was to get in place a heavy gauge cable, of the same type, and to be used for purposes of the same order as the underground toll line cables which are now working in several places in the Eastern States. Among these may be mentioned one from Boston to Brockton, Mass., about twenty miles long, and one from Boston to Worcester, Mass., a little over forty miles in length. The one from New York City to New Haven, Conn., is longer than these two put together, being approximately seventy-five miles in length. Dr. Pupin's application of the loading coil to telephony has, of course, made such underground circuits a possibility.

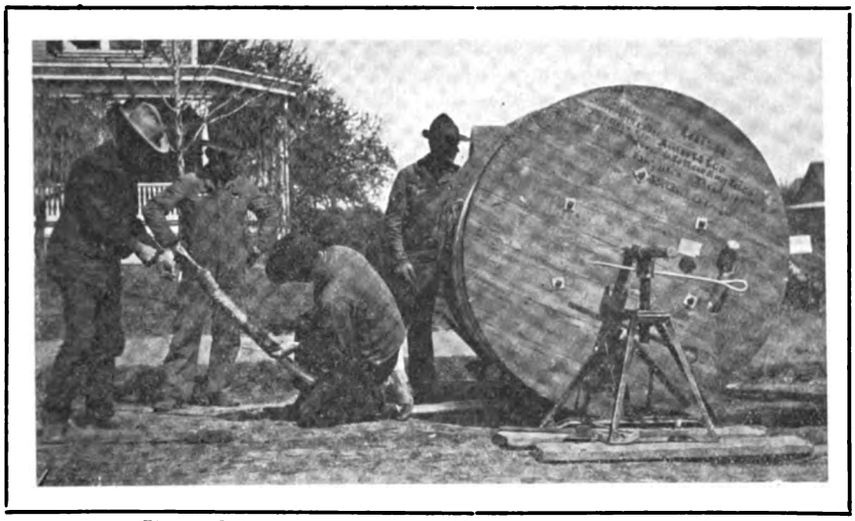

Fig. 1. Putting the grip on the cable, preparatory to drawing in.

The subway containing this cable was built in the fall of 1905. In the cities the conduit is of vitrified tile, single duct, while in the country it is of vitrified tile, multiple duct, or of creosoted wood, the last being used in rocky or swampy ground. In rocky ground there is less liability to injury to the wood duct in case of other blasting being done in the highway, and in swampy ground there is with the creosoted wood no need of cement being used. The number of ducts varies, of course, with the situation of the conduit, carefully made conduit studies determining their number in the cities. The manholes are of brick, oval in shape and with round iron covers. During the spring of 1906 work was begun drawing into this subway a toll line cable.

The picture that illustrate this article were taken just west of Bridgeport, Conn., and show the various steps in the process, we hope, interestingly. In the one showing the first operation, designated as Fig. 3, a reel of the cable has been raised from the ground by means of jacks, and two men, one standing on each side of it, are knocking off the lagging, or protecting strips, by simultaneous blows with hand axes. This seems a small matter to dwell upon, but watch the next cable gang seen do the same act, sometimes with

Fig. 2. Unreeling the cable and passing it into the manhole.

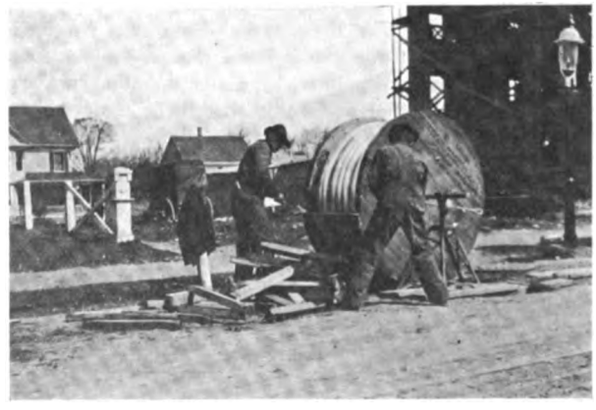

Fig. 3. Stripping the lagging from the cable reel.

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a crowbar, sometimes with a carpenter's hammer that has seen better days, but most always awkwardly, and it will be realized that it is not so simple. The men in the picture are experts, and in less time than it takes to tell it the lagging is strewn upon the ground and the cable is ready for the hitch attaching it to the drawing in rope.

In Fig. 1 are seen the men putting on the sleeve. Its style is the familiar wire network grip. Like the bamboo toy known as

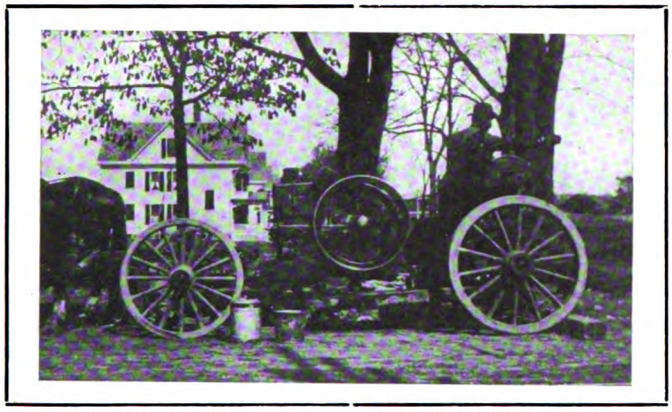

Fig. 4. Gasolene engine, mounted on truck. The engineer controls the speed of the drum with the lever in his right hand.

a "pull finger," the harder one pulls, the tighter it draws. At the end, the eye to which the pulling in rope is attached is plainly seen. The men are tying the end of the grip to the cable with marlin, in order that the first pull may not draw it off the cable, and that it may have time to tighten. The duct has, of course, been rodded and a piece of iron wire drawn into it. This wire is pulled out of the manhole near the reel, and hitched to the rear of the accompanying construction wagon. At the next manhole up the street a wire rope is fastened to the iron wire. The wagon is then driven down the street, drawing the iron line wire out of the duct and the wire rope in. When the end of the wire rope appears it is fastened to the grip on the end of the cable, and the cable fed into the manhole and through the duct. Figure 1 shows this very well, and shows this simple operation so clearly that written description would seem superfluous.

Let us then walk down the street to the farther manhole and see what the motive power is. As will be seen by reference to Figure 4, it is simply a gas engine mounted on a heavy truck. The driving wheel of the gas engine is belted to an axle, which is geared to another axle upon which is a windlass. Around this windlass is coiled the pulling in rope. By means of a lever the drum of the windlass may be made fast or loose upon the shaft, consequently the speed of the engine being constant, the driver can vary the speed with which the cable is pulled. The picture was taken while the engine was going at full speed, and if the reader will look closely he will see the blurr of the spokes of the driving wheel, and the taut wire rope that is drawing in the cable.

The next question that will occur to the intelligent construction man is how to guide the rope from the duct out of the manhole and onto the drum connected with the engine. Figure 5 answers the question and shows the means employed. An upright is formed of two heavy timbers fastened together in the form of a letter A. Two grooved pulleys, one above the other, are arranged to revolve between the two joists. It will be noticed that these pulleys are adjustable in order that they may be adapted to various heights of manhole and depths of conduit. When the upright is used, it is placed in the manhole in the position shown in the picture, and the wire rope is run from the windlass over the upper pulley, under the lower pulley, and into the duct.

NEW YORK CITY'S TELEPHONE GROWTH.

AS coming from the city having a larger number of telephones than any other of the world's great centres of population, the figures for the growth of the telephone system of New York City have a special interest. During the year just closed the net gain in the entire territory of the two companies having their headquarters in New York which, generally speaking, embraces a radius of thirty-five miles from City Hall, was 67,000 telephones—nearly 200 a day.

This has increased the system to a size which is roughly indicated by the following approximate figures:

Number of telephones in service and under contract in combined territories of N. Y. Tel. Co. and the N. Y. & N. J. Tel. Co..	389,000
Number of buildings owned and occupied by telephone companies.	60
Number of new buildings in course of construction.....	6
Number of square feet of office space occupied by telephone companies	1,094,500
Number of central offices.....	82
Total number of employees.....	17,000
Average number of people per telephone.....	14

Attention has been drawn to the fact that, although complete statistics of foreign cities are unobtainable, a comparison shows that New York has more telephones than London and the ten other largest cities of Great Britain combined; not only more than Paris, but more than all the telephones in France, Belgium, Holland and Switzerland combined, and it has more telephones than are to be found in the twenty large cities in Germany.

INDEPENDENT TELEPHONE MEN OF THE FIFTH ILLINOIS DISTRICT MEET AT PEORIA.

WHEN the members of the Fifth District of the Independent Telephone Association met at Peoria recently representatives from the various companies in the district and from outside points devoted considerable time to a discussion of the developments which will follow the entrance of Independent lines into Chicago. The meeting was held with J. S. Daily, of Chillicothe, in the chair. A constitution for the association is to be drawn up and presented at the next meeting of the association by a committee composed of C. B. Cheadle, of Joliet; H. W. Bullock, of Eureka, and G. H. Glass, of Pekin. Many prominent telephone men of the State were present at this meeting.

NEBRASKA INDEPENDENTS MEET AT KEARNEY.

DELEGATES representing the Independent telephone companies in the towns of Kearney, Shelton, Grand Island, Hastings, Kenesaw and Elm Creek met at Kearney, Neb., a few days ago. Officers of the district association were elected as follows: Dr. J. H. Lyman, of Hastings, president; Fred Ashton, of Grand Island, vice president; E. C. Krewson, of Elm Creek, secretary and treasurer. A discussion of the proposition

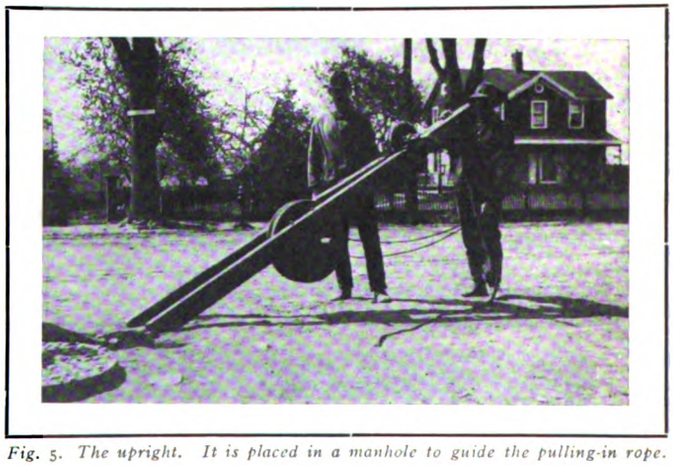

Fig. 5. The upright. It is placed in a manhole to guide the pulling-in rope.

of issuing a State directory containing the names of all independent telephone subscribers in the State was taken up, and the members expressed themselves as being in favor of the plan. As other districts have expressed a belief in the value of such a directory its publication is believed to be assured.

BOSTON ALDERMEN PASS INDEPENDENT FRANCHISE OVER MAYOR'S VETO.

AFTER it had been vetoed by Mayor John F. Fitzgerald of Boston the Board of Aldermen repassed the franchise which they recently granted to the Metropolitan Home Telephone Company. The final vote stood eleven to two in favor of the ordinance.

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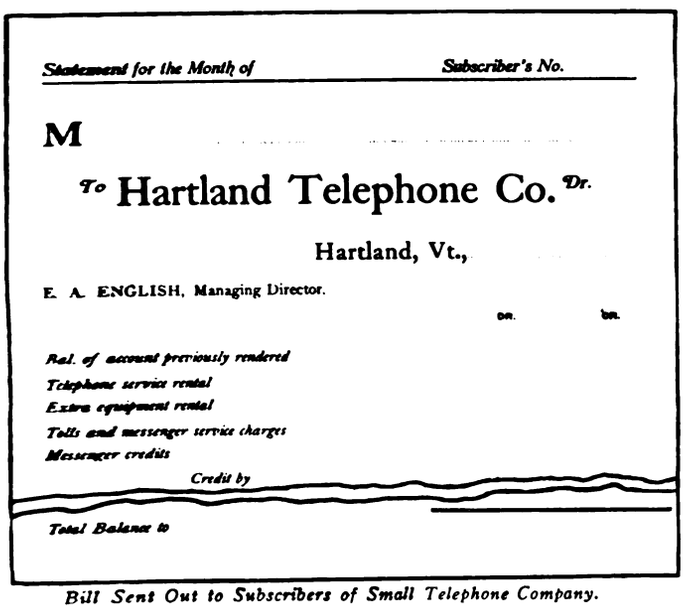
Toll Tickets and Collecting Forms

By Ernest A. English.

THE form of toll ticket illustrated in the figure which accompanies this article was devised especially for use in small exchanges which do a varied business both with the lines of the company which owns them and with other connecting companies. It will be observed that in the first place the ticket is unusually long and narrow, having dimensions of 5½ and 2¾ inches, respectively, for the length and width. This form was adopted in order to make it possible for the tickets to be laid upon a pasteboard backing in order to make them easy to handle at the switchboard. The operator, after filling in the information received when a call comes in, places the ticket upon this pasteboard backing and fastens it in place with a rubber band snapped over each end. Should she receive several calls and put them all through so that there are several tickets waiting for a circuit when the operator at a distant exchange is ready to establish a connection with the person desired, the operator can quickly locate the proper ticket. She has only to take off the band and she can then run very quickly through the pack of tickets and locate the proper one by the number or name at the left-hand end. The long narrow form of ticket is found to make this operation much easier than a square ticket, such as is most often used. This plan has been found to work out very well in practice, as the operator in the course of a day is able to save valuable time in the handling of a considerable number of toll calls.

This same style of ruling and printing is used for incoming


Statement for the Month of Subscriber's No.

M

To Hartland Telephone Co. Dr.

Hartland, Vt.,

E. A. ENGLISH, Managing Director.

DR. CR.

Bal. of account previously rendered
Telephone service rental
Extra equipment rental
Tolls and messenger service charges
Messenger credits

Credit by

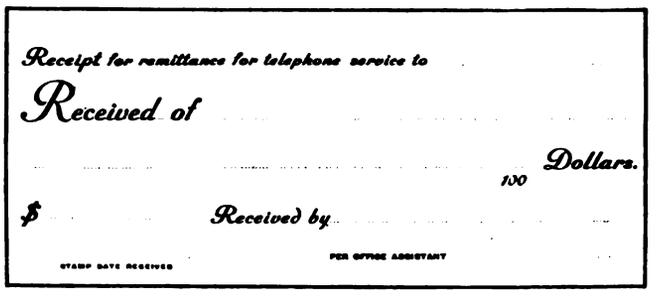
Total Balance to

Bill Sent Out to Subscribers of Small Telephone Company.

and outgoing messages. Colored forms are used for messages where collections are to be made at the distant end of the line, while white tickets are used for messages to be collected at the home office. This is the only distinction between tickets for messages in both classes, excepting in the maner of filling out. With regard to the color scheme in special cases attention may be called to the fact that an ordinary incoming ticket will be made out on a colored form, while an outgoing ticket will be made on a white form, by which it is readily distinguishable. When, however, the incoming ticket is to be charged to the person receiving the message—that is to say, when the ticket is reversed, it is made out upon the white form in the same manner as is ordinary for an outgoing ticket and the opposite of this is true for an outgoing reversed charge message. It is thus evident that all collections will be made for messages on white tickets.

Although space is provided on each ticket for very full information on each call, this is not filled in completely at the receiving station when the message is transmitted over only a short distance and between stations connected to the lines of the same company. In this case the operator at the receiving end has instructions to fill out only such parts of the ticket as are necessary to identify it for reference and the checking up of the sending station's ticket.

The space in the upper right-hand corner is only used for reverse tickets; that is to say, this is for messages on which


Receipt for remittance for telephone service to

Received of

Dollars.

100

$ Received by

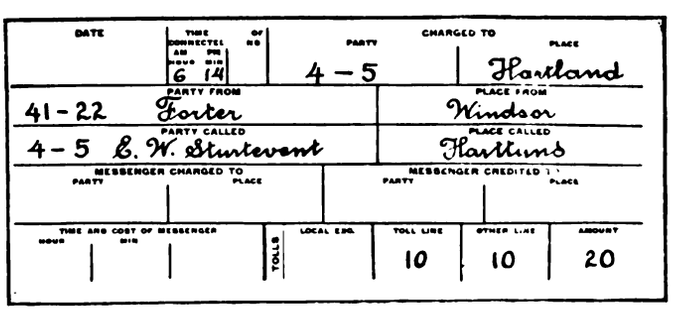
STAMP DATE RECEIVED PER OFFICE ASSISTANT

Toll Ticket, Designed in Special Shape to Facilitate Handling at the Switchboard.

the receiving person pays the charges. The messenger charge and credit spaces are, of course, only used on tickets where it is necessary to send for a person to come to the telephone and ordinarily this charge is made against the originating end of the line. Quite frequently the messenger service is performed by one of the company's subscribers, this being especially true on outlying districts. In this case the messenger fee is credited to this subscriber and a record is made on the ticket under the head of "Messenger Credited to," at the right-hand side of the form. On the outgoing ticket the only items where a messenger service charge needs to be filled out is the "Time and Cost," while on an incoming form it is customary to at least fill out the space for "Time and Cost" of the message and "Messenger Credited to."

The headings of other spaces sufficiently explain the purposes for which they are to be used. They form a guide to the operator for the recording of all information necessary for the proper handling of all classes of messages, and fit readily into a simple system of bookkeeping, such as is frequently used by small telephone companies.

It has been found in using these tickets that it would probably be advantageous to reverse the places of the two items on the second line from the bottom, as upon the lines of the company using this ticket it is found that reference has to be made more frequently to the ticket to find out the name of the person to whom the message is credited than to whom the message is charged. If this were placed at the lower left-hand end of the ticket reference would be facilitated on removal of the rubber band which binds them to the form.


DATE | TIME CONNECTED AM PM HOUR MIN | NO | PARTY | CHARGED TO | PLACE

6 14 | 4 – 5 | Hartland

PARTY FROM | PLACE FROM

41-22 Porter | Windsor

PARTY CALLED | PLACE CALLED

4-5 C. W. Stuntevent | Hartland

MESSENGER CHARGED TO: PARTY | PLACE

MESSENGER CREDITED TO: PARTY | PLACE

TIME AND COST OF MESSENGER: HOUR | MIN | TOLLS | LOCAL EXC. | TOLL LINE | OTHER LINE | AMOUNT

10 | 10 | 20

Ordinary Form of Receipt, Used by Small Telephone Company.

Two other forms which have been developed in this territory and which are giving good satisfaction are reproduced herewith. These are a bill and receipt on a perfectly simple form and

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moreover a form which is familiar to the ordinary telephone user not trained to expect a special form from a telephone company. It is believed to be on this account rather pleasing to subscribers on rural lines.

PROGRESS OF INDEPENDENTS IN OHIO DISTRICT NO. 1.

THE following letter from the vice-president of the first district of the Ohio Independent Telephone Association speaks for itself. The table which is presented with it shows not merely that the Independent companies are in a very satisfactory state of development, but they are much in advance of their Bell competitors. The information was originally forwarded to the International Independent Telephone Association, to whose courtesy we are indebted for its reproduction.

J. A. Harney, Assistant Secretary, International Independent Telephone Association, Cleveland, Ohio.

Dear Sir: I attach hereto a statistical report of District No. 1 of the Ohio Independent Telephone Association, which is self-explanatory. It is interesting to note that there is an increase over March, 1906, for the same territory, in Independent telephones, of four thousand, one hundred and thirty-four (4,134), The figures shown on the attached statement are very conservative, no attempt being made to "jolly" the Independents in this district.

It is also with a great degree of satisfaction that I am permitted to mention that the telephone companies in this district are all, without a single exception, in excellent shape. Reference can be made particularly to the situation in Geauga County, in which county the various Independent companies have banded together and formed an association by themselves, and besides giving very excellent service have improved their plants by rebuilding pole lines, and replacing iron circuits with copper.

Facts could be stated also in connection with the rest of the telephone companies in this district if space permitted, which would show without question a very satisfactory condition existing.

We were unable to obtain accurately the number of Bell telephones in Cuyahoga County, but the amount credited is a very liberal estimate of the number of their subscribers taken from their claim in the newspapers.

With reference to the service of the Independent Company in this county, would mention that through the expenditure of a great deal of money the equipment is now in such excellent condition that the local company is able to furnish as good a service as any other company in the country, either Bell or Independent.

Yours very truly,

C. L. NORTON,
Vice-President of District No. 1.

November 1, 1906.

OHIO INDEPENDENT TELEPHONE ASSOCIATION, DISTRICT NO. 1, Erie, Lorain, Cuyahoga, Huron, Medina, Lake, Geauga, Ashtabula, Trumbull Counties.

	Independent.			Bell			
County.	Telephones.	Toll Stations.	Stockholders.	Telephones.	Exchanges.	Toll Stations.	Exchanges.
Ashtabula ..	5,508	24	25	1,693	705	3	12
Cuyahoga ..	25,990	20	35	1,097	27,500	16	19
Erie	2,438	7	17	134	1,409	2	8
Huron	3,554	13	20	360	600	1	15
Lorain	5,979	15	32	250	921	1	7
Trumbull ..	3,174	16	28	554	1,328	3	17
Lake	1,882	10	20	451	398	2	13
Medina	2,490	11	2	428	150	1	1
Geauga	2,520	13	25	442	...	..	6
Total	53,535	129	204	5,409	33,011	29	98

Table Showing Conditions in the First District of the Ohio State Independent Telephone Association, November 1st, 1906.

BUFFALO BELL LOSES CITY BUSINESS.

RECENTLY there has been a controversy in official circles of Erie County, New York, over telephone rates.

It has been a known fact that in years past, before competition was introduced by the Fontier Telephone Company, the Bell Company had been making the tax payers of Erie County and the City of Buffalo pay exorbitant rates for its poor service. Not many years ago the people of Buffalo were paying to the Bell Company an annual rental of $70 for the use of 500 calls, a little over one a day, and for any in excess of this number at the rate of 10 cents apiece.

Collusion with city officials has been repeatedly charged, owing to the fact that the Bell Company has received from the city, absolutely free of charge, valuable grants of franchise, rights-of-way, in fact, almost anything that was asked for. The fire and police departments have had up, from time to time, the proposition of installing their own switchboards, to reduce the amount of their large telephone bills. They have paid extremely high rates and secured such indifferent service that it was said to be no protection to the citizens.

Until recently, these departments were unable to install their own switchboards. These conditions have been overcome, however, through the general recognition by the people of the extent of the development of the Frontier Company in Buffalo, and the fire department is now installing its own private branch exchange switchboard, which will be connected with the system of the Frontier Telephone Company exclusively.

The only way the public of Buffalo can then reach any fire house or fire headquarters will be over the Independent system.

The Bell Company was approached for rates and asked by the fire department to connect with the city's system, but the management of the Bell Company refused, on the ground that the contract with the Boston trust would not allow them to connect with a system other than that established by themselves and owned and controlled by them. The result is that the city and county of Erie are preparing to completely relieve themselves from dealings with the Bell interests.

The question of most recent issue promises to be a merry fight between the board of supervisors of Erie County and the Bell Company. The latter organization has on hand its smooth talkers, their lawyers, and their columns of figures of misrepresentations. They seem now to be without special and secret influence in the city and county buildings, and are compelled to fight in the open against a body of men who have realized the people's rights and are making an effort toward fairness and justice to all concerned. The man who started the agitation, Charles F. Sturm, the county auditor, whose high reputation was attained by bringing to light the graveyard scandal, which has already sent four men to jail and promises to make it unpleasant for many others. Charles F. Sturm, known as the watchdog of the Erie county treasury, figured up one day and wondered why it was necessary to have two systems in the city and county buildings. It was reported by the various departments of the government that the Frontier was just as available for their business as the Bell and the Bell rates were much higher, and that they could create a great saving for the county by having a Frontier telephone or making the Bell Company reduce its rates.

Meetings were called and discussion heard on all sides, by the people, heads of departments, and the Frontier and Bell companies. Facts concerning the Frontier Telephone Company, set forth in large part by its contract agent, Mr. G. Barrett Rich, Jr., confirmed the impression that it was not only giving admirable service, but had developed the territory very thoroughly.

The supervisors wanted the Bell Company to come down to the price of the Frontier, and to give unlimited service. The Bell Company argued that unlimited service is a poor system for business, saying that it was desirous of giving the young business man an apportunity of installing a telephone at a reasonable cost, instead of having to pay the same price a prosperous man would pay. Imagine the Bell Company taking care of and having sympathy for a young man in business! This is rather a bad argument, as the lowest Bell business rate is $60 for 1,200 calls, against

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a Frontier rate of $48 per year with unlimited service. When confronted with this argument the Bell representatives were unable to make an answer.

The Bell Company were asked by the Board of Supervisors to give unlimited service on the same basis as that given by the Frontier Telephone Company. After considering the matter one week, they declined to do so, whereupon the board by a vote of forty-seven to one ordered them to remove all their telephones within six days.

This the Bell Company has done and the only telephone service now used in any of the Erie County offices is that of the Frontier Telephone Company, which connects with the lines of the Inter-Ocean Telephone and Telegraph Company for Independent long-distance service.

ERROR OF TELEPHONE OPERATOR SAVES LIVES OF FAMILY.

RINGING the telephone bell of J. V. Boyer, of Marion, O., in error when there was no call for his line, a telephone operator was the means of saving the lives of Mr. Boyer and his wife and daughter.

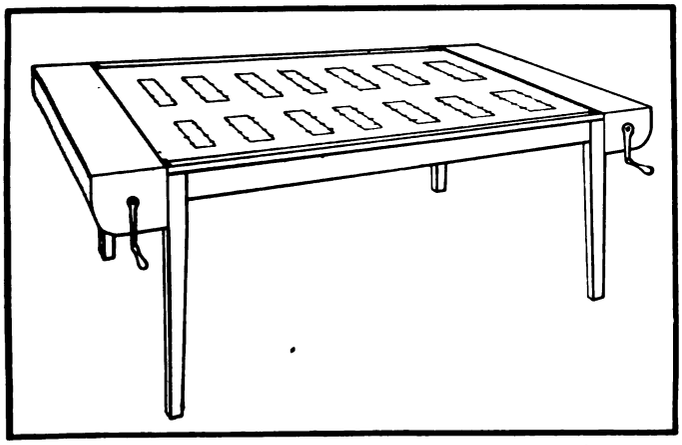
The house was afire, and when Mr. Boyer was awakened by the ringing of the bell he found his wife and daughter already unconscious from the smoke.

Filing Cable Maps

By O. R. Barnes.

SUSPENSION from the ceiling by means of suitable combinations of rollers, pulleys, ropes, etc., is the scheme for keeping their cable layout maps which has been approved and adopted by many large telephone companies. This is a convenient enough way of arranging those which show the city districts, but a very unsatisfactory method for the company whose field of operation covers many small towns. The reasons for this are not numerous and they may be simply stated; nevertheless they are good. It is obvious that a small town requires only a small map and many small maps suspended from a ceiling take up much room and present an untidy appearance. Then, too, maps hung in this manner quickly become dirty and wear out more rapidly than they should on account of the exposure to dust and other causes of injury. When such maps are taken down for a close examination they are likely to be left too long lying loose on tables and perhaps destroyed by rough or careless handling.

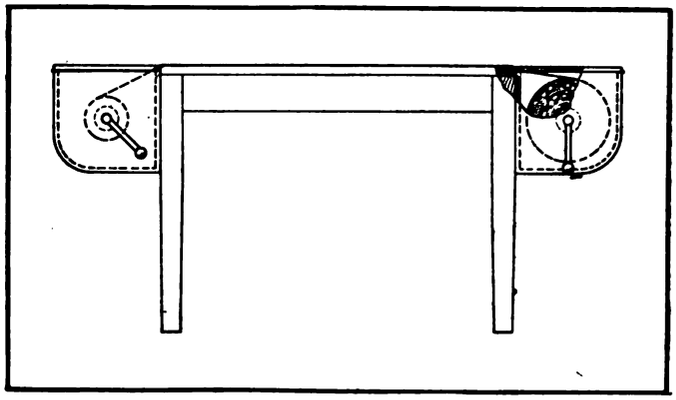
The device here illustrated overcomes many of the disadvantages of the methods mentioned. It is nothing more than an ordinary table with a box arrangement mounted on each end, in which is fitted a roller with a handle so that it can be rotated conveniently. A drum made of zinc is fitted onto the roller. A



General Appearance of Table Used for Filing Cable Maps of Numerous Small Exchange Districts.

heavy grade of linen cloth attached to both drums moves over the surface of the table as the rollers rotate. On this linen cloth, which is of sufficient length and width, are mounted the cable layout maps. The boxes have lids so that access can be had to the rollers in case they need adjusting. As the maps are mounted on the linen cloth they are numbered consecutively and a list is pasted on one of the lids giving the name and corresponding number of the various maps so as to facilitate the manipulation of the rollers in locating any particular map.

This table can also be used for the purpose of keeping record of the work in hand. Diagrams of the work to be done can be mounted on the linen cloth and as it progresses it can be checked



Side View of Table, With Roller Casing Cut Away to Show Approximate Arrangement of Parts.

off. When the work has been completed the diagram can be removed from the cloth with the aid of a wet sponge.

BUTLER COUNTY, OHIO, BEING THOROUGHLY DEVELOPED BY INDEPENDENT TELEPHONE COMPANY.

THE November issue of the directory of the Hamilton Home Telephone Company shows a considerable increase in subscribers over the numbers included in its previous issue, which came out last May. For the town of Hamilton 470 new names have been added, and not less than 640 additional subscribers have been connected to its lines through other exchanges in this territory. The Hamilton, O., *Sun*, commenting upon this remarkable growth, says that "the company's service in Butler County is almost universal, and quite indispensable to the business men."

In the make-up of the directory there are to be noted a number of interesting points. Upon the page facing the cover appear the numbers of the company's telephones, and the names of the officers and directors, as follows: Frank Hughes, president; Charles Griesmer, vice-president; J. W. Sloneker, secretary; F. W. Whitaker, treasurer; W. Gilbert Thompson, manager. Directors: E. H. Hughes, Frank Hughes, J. C. Slayback, Charles Griesmer, O. M. Blake, F. M. Barden, J. N. Sloneker, W. Gilbert Thompson and F. W. Whitaker.

On the page following are given the locations of pay stations, and after this comes a list of exchanges to which special long distance service is furnished. Rules for subscribers are given, and directions for obtaining long distance service over the lines of the United States Long Distance Telephone Company which enter the exchanges of the Hamilton Home company. Upon the pages devoted to the listing of subscribers are printed the advertisements of some of the most prominent business firms which have connections with the company's exchanges.

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IN THE OPERATING FIELD

INDEPENDENT TELEPHONE MEN MEET AT LEXINGTON, ILL.

AT a recent meeting of representatives of Independent telephone companies held at Lexington, Ill., the following were present: J. Arnold, Cooksville; A. Fiesher, Fifer; Thos. Boyd, South Chenoa; Harry W. Cox, Hudson; Charles E. Monk, Fairbury; Gomer Jones, Prairoe Hall; W. E. Platt, Money Creek. G. C. Elder was appointed temporary chairman and Gomer Jones temporary secretary of the meeting. On motion of Mr. Monk the representatives of the different companies who were present voted to organize an association to be known as the Central Illinois Free Service Telephone Association. A committee was appointed to draw up by-laws and its report will be made at the next meeting of the association, which is to held in Chenoa, Tuesday, January 8.

CAMERA AND PLATES

SHOULD BE READY

BEFORE A SLEET STORM

READ the offer of prizes for the best article on building to prevent losses from sleet storms, published in American Telephone Journal, issue of December 29th, 1906. The offer is open to you ---you need not even be a subscriber---and is absolutely unencumbered by any charges or unfair conditions. Details of the offer, as they appeared in Dec. 29th issue, will be republished next week.

Read the offer carefully. Plan an article now. Keep your camera loaded. Then, when the storm comes, jump in, get your pictures, and send us the real stuff. Why can't you win that twenty?

ANNUAL MEETING OF THE SOUTH DAKOTA TELEPHONE ASSOCIATION.

ON January 9 and 10, 1907, there will be held at Sioux Falls, S. D., the fourth annual convention of the South Dakota Telephone Association. An exceedingly interesting program has been arranged. On Wednesday morning the hours from 10:30 to 12:00 will be devoted to a reception of the members and friends by the Executive Committee and officers at the Cataract Hotel. Beginning at 3 o'clock in the afternoon there will be a series of addresses by the following speakers: W. T. Doolittle, Sioux Falls, S. D.; Hon. C. B. Kennedy, Canton, S. D.; Geo. W. Burnside, Sioux Falls, S. D.; Geo. T. Hewes, Des Moines, Ia.; J. L. W. Zietlow, Aberdeen, S. D.; R. P. Crouthers, Brookings, S. D., and J. A. Steninger, Parker, S. D. The addresses of the South Dakota men will deal with the practical features of exchange operation, after a welcome by W. T. Doolittle, of Sioux Falls, and an address by the president, the Hon. C. B. Kennedy, of Canton, Mr. George T. Hewes will speak of his work in establishing and conducting a clearing house at Des Moines, Ia. In the evening addresses will be made by the following gentlemen: E. A. Bryce, Yankton, S. D., on Independent Toll Lines; H. P. Hartwell, Irene, S. D., Telephone Associations; F. C. Mariner, Northville, S. D., Needed Legislation; P. C. Holdoegel, Rockwell City, Ia., The Success of the Iowa Independent Telephone Association; A. S. Hall, Redfield, S. D., Is It to the Interest of Telephone Men That All Toll Lines Connect With Local Exchanges on Equal Terms; J. H. Shoemaker, Waterloo, Ia., Is a Toll Line Company Which Refuses Connection With an Independent Company to be Regarded as Independent?

On Thursday, January 10, the morning session will be devoted to an examination of the exhibits of manufacturers, while in the afternoon at 1:30, and at a continued meeting at 7:30, the business affairs of the Association will be discussed. At 11 o'clock in the evening there will be a banquet at the Cataract Hotel. The broad range of papers to be presented promises that the meeting will be exceedingly interesting, and it is hoped that the members will be prepared to take full advantage of the opportunity to become more closely in touch with the work of the Association. The officers of the Association are C. B. Kennedy, president, Canton, S. D.; J. A. Steninger, vice president, Parker, S. D.; E. R. Buck, secretary-treasurer, Hudson, S. D. Executive Committee: Geo. W. Burnside, Sioux Falls, S. D.; H. P. Hartwell, Irene, S. D.; M. B. Ryan, Beresford, S. D.; P. R. Crouthers, Brookings, S. D.

MEETING OF INDEPENDENT TELEPHONE MEN AT IRONTON, OHIO.

AT a meeting of the members of the Independent Telephone Association held at Ironton, O., H. P. Folsom, of Circleville, was chosen chairman, and B. F. Forgey secretary. Many interesting discussions of matters of general and local interest were held, and the members derived much pleasure and benefit from the meeting. U. T. Cox spoke at some length on the needs of the country exchanges, and the undesirable effects of free exchange. Among those who participated in the discussions were Col. H. A. Marting, F. L. Beam, Dwight E. Sapp, H. B. Mauck, L. D. Eaton, Lon Hutchinson, John Keyes, R. A. Knapp, John Ainsworth, H. S. Grimes, Dan Mossman, E. M. Hamilton, Wilson Prichard, John Woods, John Banks, Nat Burcham and others.

R. A. Knapp and U. T. Cox were appointed by the president of the meeting to present a plan for perfecting a permanent county organization.

After the business of the meeting was over the members met at a banquet in the evening, where the time was most enjoyably spent. Among the speakers at the banquet was F. L. Beam, president of the Ohio State Association, who said that the Independent companies are handling practically 85 per cent. of the business done in Ohio at the present time.

TELEPHONE KICKS PROSTRATE TROUBLE OPERATOR.

BESSIE LANE, trouble operator at the Bell exchange, say the Cleveland, Ohio, daily papers of Dec. 20th, is ill from nervous prostration brought on by receiving 60,000 wails since last January. "The continual strain brought on a collapse," said the girl Thursday. "When I woke up I thought that a horse had kicked me in the head."

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QUERIES

SUPERVISION ON TRUNK CIRCUIT.—(807.)

We are about to go to work on the design of a trunk circuit. Can you tell us whether the disconnect signal should be given to the operator at the exchange nearer the called subscriber, or to the one who puts in the call? We cannot agree on this, and would like to have you give us a statement of the best plan, with the reasons why it is the best. B. R.

ALTHOUGH the wording of your question is not quite definite, we think the following reply will cover the current practice on the point concerning which you are inquiring. All supervision over a trunk connection, it is now generally agreed, should be concentrated, as far as is possible, at the position of the operator who receives the call and forwards it to a second operator for completion. The reason for this is that, as this operator is the only one who can communicate with the subscriber, she should be in a position to know immediately when the called subscriber at the distant exchange responds. She is thus in a position to deal intelligently with any communications relating to the connection which may be received from the calling subscriber. She knows instantly when the connection is completed, and thus is made aware that no further attention to a call, such as repeated ringing, etc., is necessary until one of the parties hangs up his receiver. If there should be any accidental interruption of a connection it is well to have signalling apparatus so arranged that the difficulty will be automatically indicated at the end where the call originates, as the connection may be more quickly and easily re-established through communication with the calling subscriber.

When the disconnect signal is received it should also come to the originating end, in order that the operator may clear the connection at the instant the conversation is terminated. Rapid clearing out of connections is more important at a subscriber's operator's position than at an incoming trunk position for several reasons. Among these may be mentioned that such a position handles a heavier load on an average than a trunk position, the capacity of which is limited by the capacity of the call wire to receive instructions. The face of the switchboard is also more obstructed by a given number of connections at such a position, as each subscribers' operator uses two cords for a call as against one cord per call for a trunk operator.

Other reasons for the practice can be given, but we believe the above will be sufficient to indicate the advisability of following the plan of giving the originating operator the entire control of a trunk connection. At the incoming trunk position the disconnect signal is lighted, of course, when the subscriber's operator removes her plug from the trunk—not when the called subscriber hangs up.

QUIET SUPERVISION.—(808.)

We have a two position magneto board with taps from both operators' sets wired back to the manager's office. The wiring of these taps terminates upon the respective end sets of clips of double pole double throw switches, the center points of which connect to the manager's set. Through this arrangement he can switch his telephone to either operator's set, and listen to the conversation she carries on. These lines run through condensers, and there is a condenser in the manager's talking set. The operators can hear sufficient noise when the manager takes down his telephone and cuts in on the line to enable them to detect the act, and so the efficiency of the supervision is impaired. Is there any way possible to wire this circuit so that the operators cannot hear the click when the receiver is taken down? W. M. B.

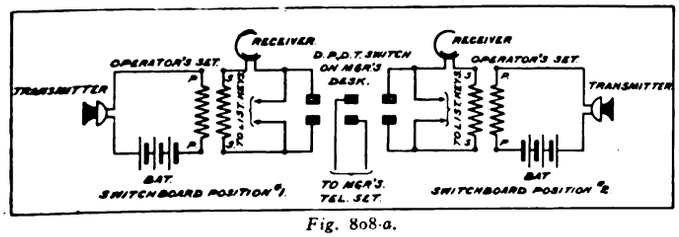

Fig. 808-a.

IN the diagram Fig. 806*a* is indicated a method of wiring the taps from operators' sets at the switchboard to the double-pole switch. You will see from this drawing that the simplest form of talking circuits is shown, from which the taps to the manager's supervising switch are taken directly off in multiple with the leads to the listening springs at the keyboard. As the switchboard is of the magneto type, we assume that there is no condenser in the receiver circuit. The only wiring necessary, then, from the switchboard to the switch will be two pairs of wires run directly and no condensers are necessary. We would also suggest that you cut the condenser out of the manager's talking circuit. In this way you will eliminate

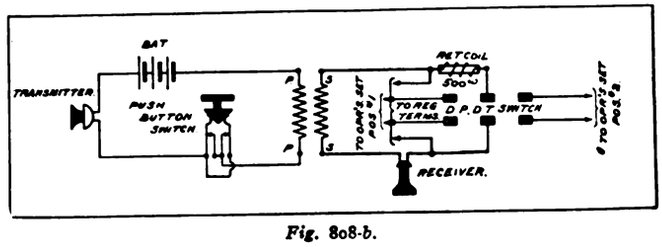

Fig. 808-b.

any possibility of a click due to a charge or discharge of this condenser, which would be likely to occur under a great variety of circumstances which can be mentioned. A condenser in a supervising circuit should be avoided wherever possible, as no arrangement of retardation coils will entirely smooth out the rush of current due to the condenser's charge or discharge.

Into the secondary circuit of the manager's telephone should be introduced a retardation coil of about 500 ohms resistance with a fair-sized iron core. This causes any variation in the current flowing through the operator's set, due to the action of this circuit in shunt with hers, to come on with comparative slowness, thus avoiding a click. It is advisable also to use some sort of a push button switch to open the primary circuit immediately before closing the supervisory switch. This key should be kept depressed during the time the manager is supervising in order to keep the operator from hearing tones transmitted from his position. The circuit for this set is indicated in a simplified form in Fig. 808*a*. It is to be noted that the retardation coil does not enter into the talking circuit when the manager's set is used with an ordinary line to which connection is made through the wires marked "To regular terminals" in the diagram.

KICK COIL TELEPHONES.—(809.)

THE subscriber who wishes to hear from operating men who have had experience with kick coil telephones is still looking for more information. Everyone who has had experience with this type of instrument is invited to write at once and tell the results obtained. Any available material will be accepted for immediate publication, and paid for at regular rates.

TRANSPOSITION.—(810.)

In constructing a telephone line one mile in length, with two six-pin arms, parallel with another line, with no other disturbance, what is the proper scheme for transpositions, with thirty-two poles and with forty poles to the mile? C. T. W.

THERE is no reason for transposing a line only one mile long unless there is a high potential transmission line on the same route. Transposition then depends on the distance between the telephone wires and the high potential circuit, and the proper plan may best be determined by experiment in each case.

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THE EDITOR'S PAGE

UNDERGROUND LONG DISTANCE CABLES.

THE article on pulling in the New York-New Haven cable draws attention to a development of one branch of telephone work which is significant from more than one point of view. Perhaps the broader field for thought lies in the advances in the use of telephones for communication which have led to this concentration of wires for so considerable a distance. Telephone men are to some extent acquainted with the elaborate and expensive investigations undertaken subsequent to the announcement of Dr. Pupin's mathematical discoveries which have made it possible to transmit conversations through cable for a distance hitherto considered impracticable. The installation of these special loaded cables, each containing many wires, has since that time been completed along routes connecting a number of important cities. Their use is a convincing demonstration not only of the growth of telephone communication, but of the immense commercial value of the business messages which daily pass through such equipment.

PUSHING EXTENSIONS.

TELEPHONE companies which are now well established and have their lines run to a good proportion of the business houses and residences in their respective territories will in the future be compelled to give an ever increasing amount of attention to methods of acquiring new business. After development reaches a certain point there is usually a period when new subscribers come easily. The telephone habit seems then to be contagious, and all the solicitor has to do is to make a brief call and take the contract. Such enthusiastic reception of the mild efforts of the company, however, cannot long continue. All the people in certain classes, which may be more or less roughly defined and settled upon in advance as "easy prospects," will be found to be constant users of the service. Of the remainder many will have considered the matter and made an adverse decision. When approached some will make evasive answers, others will come out with a "No," prompt and firm, and the balance may at least be depended upon to sit back in their chairs and say "Show me." Then they must be shown, and that on the instant, too. Failure at the moment to bring forth a convincing line of argument will, unless the utmost tact is exercised, put the telephone company in the position of an adversary beaten in debate. The person approached finds himself suddenly in a new position. Before spending the money for a telephone he wished to justify the outlay. Most of the arguments in favor come from the company, those against are his own. If he gets the better he becomes firmly convinced that the time for subscribing has not come and his name may just as well be set aside for a few months. Effort is wasted. The prospect is lost.

Prevention of this kind of failures can only be accomplished through the exercise of some considerable foresight and study. The wise manager will realize that about the best preparation he can have for getting the maximum results in his own business is a good knowledge of that of his possible customers. If he has this he can proceed with a pretty fair degree of certainty. When the grocer demands to be shown the solicitor who is sent out goes primed with facts. He is able to put himself in the grocer's place. He knows how, if he were that particular grocer, he could use the telephone in such a way as to save the labor of a boy. There is something concrete. He has but to put it in words, to demonstrate it, and the contract is his. The same can be said of the method of approaching a man who owns a blacksmith shop. A single clear statement which will show how the telephone can be made an instrument to be used in carrying on his business is the thing. But the solicitor must know the blacksmith's business before he goes to the shop. Before he even sees the door he must be prepared to prove without faltering that the telephone is as essential a part of the fittings of such a place as the very forge. If he cannot do this and back up his statement solidly against possible contrary views of one who has been a blacksmith all his life he would better not undertake the job. Better to let the attempt wait a few days for the preparation than to turn the prospect into an opponent. So it goes all along the line. A large amount of business will be brought in by this sort of hammering. But the work will have to be done with skill and care to make the work worth while. And above all, let the preparation come before the trial.

Many will say this is too delicate work for the present. It is raking the field with a fine tooth comb and the time has not yet come for that. Such preparation takes too much time, costs too much money, to be wasted on isolated groups of individuals. If their development is in such a stage and the attitude of the public so settled that their judgment is correct, they must then turn to methods of broader scope. Their field lies in the creation of plans for awaking an interest. Publicity is what they will seek. Interest in the telephone service is to be aroused, and is to be aroused in a definite form. It must lead the person who is hearing about the telephone and seeing things about it in his paper and elsewhere to want one for himself. This is a fascinating field, where there is yet much to be done.

Then passing over the matter of extension sets, duplicate lines and other things which need not be touched upon there is the matter of toll service, which is of great and rapidly increasing importance. Here, again, there is required to a high degree a knowledge of local conditions. There is the advantage of partial familiarity on the part of the user with the commodity which is to be sold. When the service is good there should be little difficulty in pointing out things for which it can be advantageously used which will be new to nearly every subscriber. Ideas gathered from one will be useful to another.

Results obtained in the past indicate that the telephone business depends for its extension very much upon the amount of its use in actually developing the business of those who employ it. Strengthening his own position by contributing intelligently to the strength of the business which surrounds him will during the coming year occupy much of the attention of the alert and efficient telephone manager.

TALKING THROUGH YOUR CHEST.

PERSONS not familiar with the action of the vocal organs derive considerable amusement from carrying on a telephone conversation with the transmitter placed against their chests. With the instrument in this position the sound transmitted is reproduced with a loudness almost equal to that heard when the mouthpiece is immediately in front of the lips of the speaker. The voice of the speaker may be readily recognized, but there is sufficient alteration in the quality of tones to make it possible for a change from this position to the customary one to be readily detected.

Desk set users will do well not to attempt to muffle a transmitter by pressing it against their coats, as is sometimes done by persons who use the telephone while standing, if they wish to say things which should not be heard at the other end of the line.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

DAMAGE FROM FIRE.

Some electricity generated by an electric railway company which has a line near here escaped from its trolley wire to one of its span wires, thence to a telephone cable of our telephone company, then to a telephone cable of another telephone company in business here, thence to a gas pipe in a store building, thence to the lead connection with the gas meter in the basement, which was melted off, igniting the gas, setting fire to the floor above and damaging a stock of goods. The owner of the store wants us to pay for his loss, but we do not feel inclined to do so, as he cannot show any particular way in which we were negligent. Please give us your opinion of our liability in this case. F. H.

YOU are not liable in any way unless he can show some particular way in which you were negligent. Your negligence does not appear at all from the statement of facts you have given. See Marsh v. Lake Shore Electric R. Co., 7 Ohio C. C. (N. S.) 405, a case in which the course followed by the escaping electricity was quite as remarkable as the above, and in which no liability was found by the courts.

NOT A CASE OF DISCRIMINATION.

The Bell Telephone Company in this vicinity extended its lines through a recently settled part of the village without getting permission from the village trustees. Our company (Independent) has been in business for a number of years and has always complied with the law and never made any extension or new construction without permission from the proper authorities. The trustees have now passed an ordinance requiring the Bell people to place their wires underground, and the property owners in the locality where the extension is being put in have got out an injunction restraining the Bell people from building any farther on the surface. The contention of the Bell people is that they are being discriminated against, because we were not also required to put our lines underground. The ordinance does not require all of the Bell lines to be placed underground, but simply the new extension for which the company has not obtained permission. It does not seem to us that there is any discrimination because we are strictly within the law. Please give us your views and cite authorities if possible. L. A. T.

YOU are correct in your belief that the fact that the trustees required the extension to be placed underground without requiring your company to place your wires underground does not prove discrimintion. It was so held in a similar case entitled Village of Carthage vs. Central New York Telephone and Telegraph Co., 96 New York State, 919; 48 Miscellaneous, 423; 96 New York State, 917. In this case it was held that an injunction restraining the erection of lines pending an action to require the company building an extension to place its wires underground should not be vacated where the facts as the propriety of such action are in dispute.

HOME TELEPHONE COMPANY SEEKS REDUCED ASSESSMENT.

CLAIMING that its special franchises in Schenectady, N. Y., are overtaxed in proportion to its other property, the Schenectady Home Telephone Company is starting an action to have its assessment reduced and to have a thorough investigation of the system of assessment in the city made by the State Board of Taxation.

In its petition the company sets forth that the property in the city is assessed at 73 per cent. of its value instead of at market value as required by statute. The assessment of the special franchises of the company is said to be $70,000, and this amount is claimed to be the full value of the franchises. Thus the company is alleged to be paying taxes on an overvaluation to the extent of $18,900 according to the system in use by the city assessors.

The duty of the State Board of Taxation is to equalize the taxation and hence an appeal is made to them. It is pointed out that the system of levying assessments in this city is not in accordance with the statute, and that prejudicial acts should be investigated.

ATTORNEY GENERAL MAY HAVE ASSISTANCE IN PROSECUTING RATE CASES.

JUDGE LUDWIG, of Milwaukee, has decided that Attorney J. G. Flanders may assist Attorney General Sturdevant in prosecuting the State's case against the Wisconsin Telephone Company charging rate discriminations. The State brought suit against the Bell system to collect a forfeiture provided for in the statute which the last legislature enacted for the purpose of preventing discriminations in rates of service. The cities of the State were classified according to population and it was provided that no company maintaining telephone exchanges in more than one city of the same class should exact higher rates for service in one place than in the other.

This law was designed to prevent the Bell system from using what was charged to be unfair methods of competition against the Independent companies. It was alleged that the Bell companies would establish a ruinously low rate in one place until the Independent company was crushed out, and then would boost the rates high enough to make up for the sums lost in the competition. The law was not obeyed by the Bell system, it is alleged, and the Attorney General brought suit to collect the forfeiture. The Bell company's attorneys moved that the attorneys who appeared in the case for the Independents be forbidden to participate in the litigation, but Judge Ludwig holds that other attorneys than those representing the State may lawfully appear.

INDEPENDENTS MAY BUILD AT BLOOMFIELD, INDIANA.

THE injunction suit brought at Bloomfield, Ind., by the New Home Telephone Company whose lines cover Greene County, against James S. Edwards and other persons, of Lyons and Washington Townships, has been decided in favor of the defendants. The suit grew out of an attempt to prevent the defendants from building an independent system. A temporary restraining order was issued which has now been dissolved. The Independent promoters can proceed at their pleasure.

CHICAGO COMPANY CANNOT BE COMPELLED TO FILE STATEMENT OF GROSS RECEIPTS.

ACTION of the Circuit Court of Cook County, Ill., denying a writ of mandamus to the City of Chicago to compel the Chicago Telephone Company to file a semi-annual schedule of its gross receipts was upheld by a decision of the Appellate Court of the State on December 11.

The petition of the city prayed that the telephone company be required to file with the City Comptroller a true statement of the gross receipts and that the corporation be required to pay into the City Treasury 3 per cent. of the gross receipts.

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TELEPHONE PATENTS

SWITCH FOR INTERCOMMUNICATING SYSTEM.

F. J. Ravlin and John Lofgren, Chicago, Ill., patent (No. 829,736; dated August 28, 1906; filed January 15, 1906; serial No. 296,001) and assign one-fourth to Arthur T. Averill, and one-fourth to Glenn M. Averill, Cedar Rapids, Ia., a switch for intercommunicating systems.

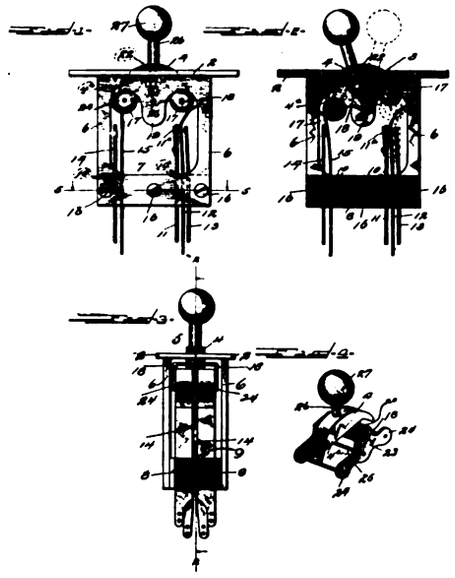
The inventors describe in this patent a combination of ratchet wheels, etc., to be operated by hand for the purpose of actuating selecting switches located at a central point in an intercommunicating system. Special arrangements of the ratchet mechanism to make it easy to operate and reliable in performance, together with an indicating device, form the basis of the patent.

OPERATOR'S KEY.

Albert Carliss, Chicago, Ill., patents (No. 836,668, dated Nov. 27, 1906; filed April 1, 1901; serial No. 53,776) an operator's key.

This patent covers a ringing and listening key with vertical springs. The top plate, 2, consists of a rectangular piece of metal provided with a central slot. Through this projects the segmental base 4, of key lever 5. This is adapted to vibrate to right or left, and maintain the closure of the slot in whatever position it may be placed. Side plates 6, extending from the lower side of plate 2, are provided with apertures at 7, to make a light construction and facilitate inspection or adjustment. Between these side plates are secured insulated pieces 8-8, separated by a thin insulating strip 9. These are clamped in place by screws 16, after switch springs have been inserted in slots 10. In each group one spring, which is flexible, projects above the others and into the path of the insulating rollers 17.

These rollers are mounted upon the tilting frame 18. This tilting frame may be made of a sheet-brass punching, and secured to the lower edge of the segmental lever base 4, by a bolt 22, an

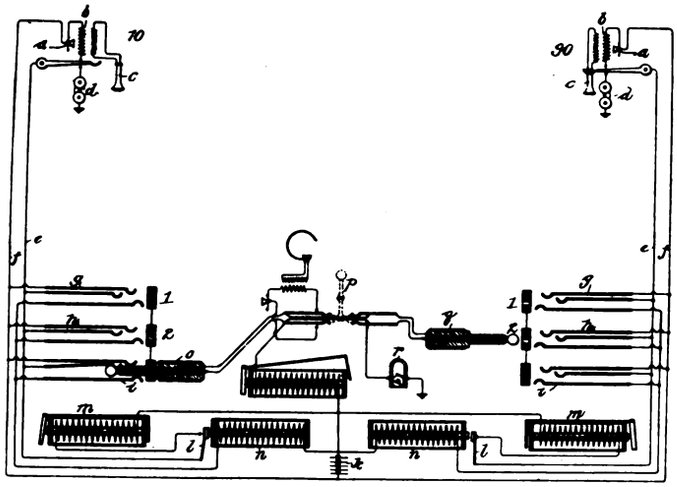


extension of which serves as a handle. Pivot 25, in the tilting frame, engages openings in the frame 6. When the key is thrown to the left, springs 15 press upon the rollers in such a way as to hold the key in its thrown position; that is, they exert their pressure at a point above the line joining the axis of the roller and the pivot 25; but as soon as the key is started back to its normal position the force of the spring facilitates its return. Other springs 12, used for ringing, are so formed as to at all times return the key lever to its normal position.

The vertical arrangement of springs enables the mechanism of the key to be compressed into a space having small horizontal dimensions.

TELEPHONE EXCHANGE SYSTEM.

W. M. Davis, Seattle, Wash., patents (No. 12,560; dated November 20th, 1906; original No. 679,731, dated August 6th, 1901; application for reissue filed October 30th, 1903; serial No. 179,243) and assigns by mesne assignments to the Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y., a telephone exchange system.



The invention covered by this patent consists in the arrangement of the line signal controlling relay in connection with specially constructed jacks, as shown in the illustration. When a subscriber removes his telephone from the hook the magnetic signal *m* is actuated through contact *l*, which is normally closed. The insertion of the plug causes the jack spring associated with line wire *f* to be connected through a metallic ring in the plug to spring *i*. It will be seen that this completes a circuit through relay *n*, which on the attraction of its armature breaks the circuit through line signal *m*, allowing its restoration to the inoperative position.

TELEPHONE BRACKET.

Charles H. Borden, Stamford, Conn., patents (No. 834,104; dated October 23, 1906; filed August 29, 1905; serial No. 276,249), a telephone bracket.

The inventor describes a telephone bracket of the type in which two parallel arms, pivoted at the ends, are fastened to a wall or desk bracket and to a support for the instrument so as to allow of vertical and horizontal movement and at the same time retain the telephone in a vertical position. A pair of spiral springs, mounted on the base support of the arm, are used to balance the weight of the telephone. In order to counteract the increased tension of the springs when the bracket is depressed, a cam-faced nut is provided at one of the joints. The inventor intends that the action of this nut shall perfect the balance of the arm.

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GRAY PAY STATIONS PAY

BECAUSE NO ATTENTION IS REQUIRED AFTER INSTALLED

You are instructed not to shout in a telephone, as you can hear better by talking in a natural, distinct voice.

The same rule applies to our perfect system of signals—they are clear and distinct to the operator and not confusing like lever blows of hammers.

GRAY TEL. PAY STATION CO. HARTFORD, CONN.

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

POSITION WANTED—As Assistant Manager or Superintendent of telephone exchange of two to eight hundred subscribers. Six years' experience, good habits and can give best of reference. Address Box 717, care THE AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 717

WANTED—First class man to manage an Independent Telephone plant in good Southern city, one who would take a financial interest in the company preferred. To right man an excellent opportunity will be offered. Address Box 751, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 751

WANTED—Well educated young man, good appearance and references with some telephone experience. Write fully. Address Box 727, care THE AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 727

POSITION WANTED—A practical telephone construction and equipment man, with twenty-five years' experience with one of the largest operating companies in the United States, desires position as assistant engineer or superintendent of equipment. The advertiser is holding a similar position at present, but wishes to enter the service of a company where he will have more extended opportunity. Thoroughly experienced in every branch of the business. Address Box 740, care THE AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 740

WANTED—Position as Manager or Superintendent of telephone plant, salary must be not less than $100. Most any locality satisfactory. Twelve years experience with Bell company, 30 years of age. Address Box 750, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 750

WANTED---Continued

WANTED—Position as manager or assistant by thoroughly competent construction man and executive. Gilt edge references. Address Box 743, care THE AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 743

WANTED—Telephone solicitor. State experience and references. Address, People's Telephone Co., Superior, Wis. 748

WANTED—Several men with factory experience as Installers on Central Energy Switchboards. Address Box 752, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 752

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Form G-90-E.	For Small Exchanges, Rentals only.
Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
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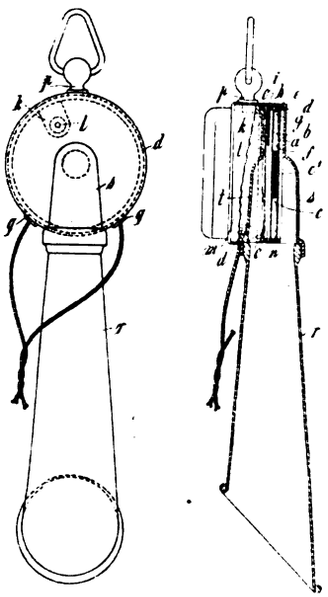
MICRO-TELEPHONE.

Arvid Andersson Lind, Malmo, Sweden, patents (No. 835,860, dated Nov. 13, 1906; filed Feb. 28, 1905; serial No. 247,792) a hand micro-telephone.

The object of this invention is stated to be to provide a transmitter which will not be subjected to air currents and reflected sound waves, which have a tendency to reduce clearness of transmitted speech.

The inventor has provided a micro-telephone in which the receiver is arranged in a special casing, *m*, which may be inserted into the casing *d*, which holds the transmitter. Into the transmitter case leads a hollow mouthpiece, *r*, which also serves as a handle. This opens directly into a recess in the case, formed by making a hollow swelling, *s*, in the back wall and a corresponding cavity, *t*, in the casing of the receiver. In the middle of this opening is mounted by a suitable mechanical arrangement a pair of transmitter diaphragms. The carbon grains, c^1 are con-



tained between the two diaphragms, and the sound waves simultaneously impinge upon both diaphragms, causing them to approach each other or become more widely separated, thus varying the resistance through the granules c^1.

The inventor states that the effect of ordinary air currents, and local sound waves due to reflection, is likely to cause both diaphragms to swing together in one direction or the other, so that these vibrations produce no effect upon transmission.

Peculiarities of construction which will be evident from a careful examination of the drawing are mentioned in the description.

ELECTRIC ALARM.

E. S. Moorer, Anderson, S. C., patents (No. 837,097; dated November 27, 1906; filed September 16, 1905; serial No. 278,739) an electric alarm.

This patent covers an arrangement of apparatus and circuits, to be connected to a telephone line at a sub-station, for giving an alarm when disturbed by fire, the movements of a burglar, etc.

TELEPHONE ATTACHMENT.

Joseph Silverman, San Francisco, Cal., patents (No. 836,407; dated Nov. 20, 1906; filed March 5, 1906; serial No. 304,285) a telephone attachment.

The object of this invention is to provide a means for controlling the position of a switch hook in a telephone instrument of the ordinary type when the receiver is permanently held by some other auxiliary device. The supporting member is a standard which may be fastened to the case of the telephone near the switch hook. Pivoted at its central point to the standard is a cylindrical plate, to the periphery of which is attached a finger adapted to be laid across the switch hook and hold it forcibly in its lower position. The necessary power for holding the finger horizontally against the tension of the switch hook spring is supplied by a spiral spring attached respectively to the standard below the finger plate, and to a pin inserted in the finger plate near its periphery, and on a radius 45° above and towards the instrument from that of which the finger is a continuation. It will be seen that a slight motion imparted to the finger will cause its rotation far enough to carry the pivoted spring past the vertical or dead point, and that this spring will cause the continued rotation of the finger until further motion is prevented by a stop acting on a recess in the plate. This provides a simple mechanism for the purpose desired, which does not prevent the hook from being easily vibrated up and down.

SELECTING AND SIGNALING SYSTEM.

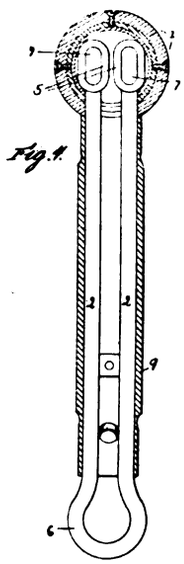
Robert J. Sheehy, New York, N. Y., patents (No. 831,687; dated Sept. 25, 1906; filed Oct. 9, 1902; serial No. 126,507) a selecting and signaling system.

The inventor provides for a step by step selective system, using alternating current and polarized relays. At each station there may be several forms of signal receiving apparatus, such as a Morse outfit, printing telegraph or a telephone instrument, any one of which may be connected to the line by the operator at the central station by means of the step by step mechanism, and it is thus evident that the invention relates more especially to railroad and municipal telegraph and signaling systems. He claims that the central office operator may select one or more of these stations on the line and connect them either with each other or with the central office, so that communication may be simultaneously had with all the stations on the line if it is desired.

HAND TELEPHONE.

Stephen C. Hougton and Frank M. Potter, Jr., Syracuse, N. Y., patent (No. 837,470; dated December 4th, 1906; filed October 5th, 1905; serial No. 281,381) and assign to the Wire and Telephone Company of America, Rome, N. Y., a hand telephone.

This patent covers the long magnet hand telephone structure manufactured by the Wire and Telephone Company of America. In the illustration is shown a long permanent horseshoe magnet 2, which supports at its extremeties the receiver and transmitter; 1 represents the receiver, having electro magnets (5), the cores of which (7) extend into engagement with the permanent magnet



to the poles of which they are secured by pins. The circularly formed heel (6) of the permanent magnet embraces the shell of the transmitter, providing for it a rigid support. A shell of suitable insulating material is molded about the lower portion of the long magnet and forms a handle for the instrument, and this also conceals the connecting cords which extend from one end to the other between the limbs of the magnet.

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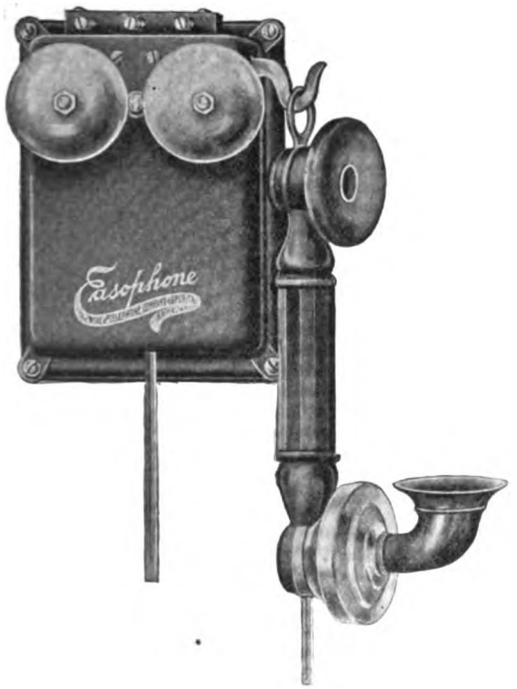

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ROME, N.Y.

Long Distance Hand Telephone
Long Horseshoe Magnet Receiver

SOLID BACK TRANSMITTER — SINGLE COIL RINGER
NO EXPOSED CONNECTIONS — REVERSIBLE HOOK

Visit our Exhibit Electrical Show, Chicago, January 14th to 26th
Space No. 16, Section "C"

WRITE FOR BULLETIN No. 101

THE WIRE & TELEPHONE COMPANY OF AMERICA
ROME, N. Y.

Assuming your toll rate to a certain point is 80 cents for 3 minutes, and a man talks 3 minutes and a half, the amount you should receive is $1.07. If your operator charges him for only 3 minutes, you lose, don't you?

Experience has shown this happens in most exchanges many times a day.

But don't blame the operator; she is only human, and mistakes the position of the hands on the clock.

It's time for you to install

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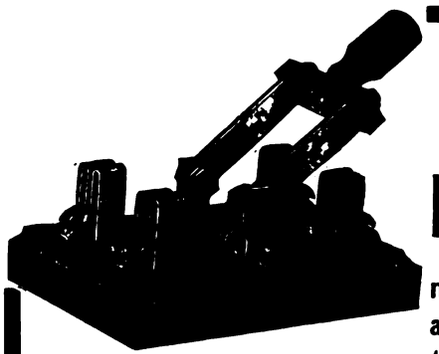

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IN THE MANUFACTURING FIELD

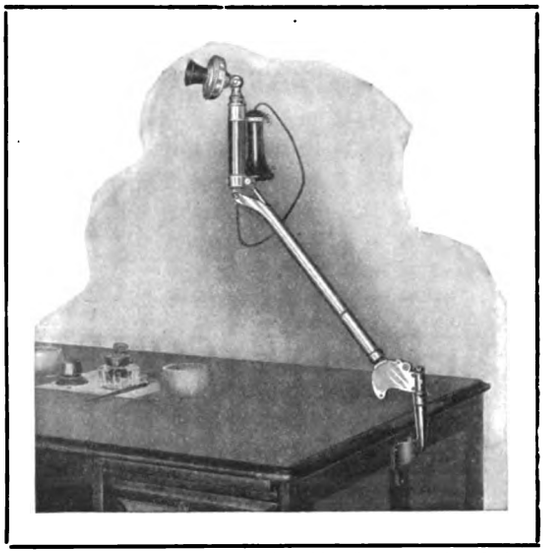
"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

A NEW TELEPHONE ARM.

AS a device for adjusting the telephone to a large variety of positions to suit the convenience of the user the Oliver Manufacturing Company, of Philadelphia, Pa., has been able to present in the "Flexiphone" an instrument not only novel in general form, but embodying constructive features of unusual merit. This success is undoubtedly largely due in a measure to the earnest co-operation of the Holtzer-Cabot Electric Company, of Brookline, Mass., which will participate with the Oliver Manufacturing Company in the manufacture and general sale of the "Flexiphone" in the United States as special licensees.

The instrument offers ample evidence of the presence of new ideas, unhampered and untrammelled by the conventions and ruts of "the way we used to do it."

The arm, as it appears in use, is shown in an illustration on this page. The attaching device is provided with an angle head, adapting it to any kind of a flat top or roll top desk, to the wall or in almost any conceivable position. The adjustable arm is of cold rolled steel with a handsome hard rubber finish, trimmed in full nickel; the arm is carried by, and longitudinally slides on, an inner supporting rod; a double cam at the base imparts just sufficient end-wise motion to the tubular arm to maintain the pedestal portion always in an upright position during the vertical swing of the arm, which also has a horizontal movement on the supporting stud of the desk attachment.

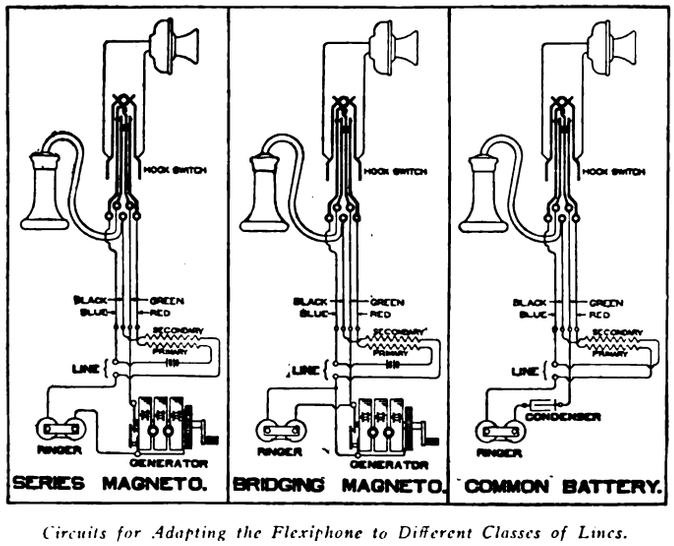


The Flexiphone, a New Adjustable Support, Attached to Desk.

A unique and convenient feature of this invention is the revolving head, carried on a hollow vertical stud at the upper end of the pedestal. This head supports the transmitter and permits it to rotate through an arc of two-thirds of the circumference of a circle in a horizontal plane, making the mouthpiece accessible at either side or in front of the arm. It always faces you. This rotative movement of the transmitter, together with the horizontal and vertical swinging of the adjustable "self-balancing" arm, makes this in fact a flexible telephone support; hence its name, the "Flexiphone." This one instrument may be used as a desk or a wall telephone and yet is without certain faults which impair the usefulness of both these types, such as the risk of fallen and broken instruments, tangled or broken cords, etc.

Some interesting results were produced by the Holtzer-Cabot company in the design of the parts that interest the telephone inspector or trouble man. Remove one screw near the head of the pedestal and the transmitter and transmitter switch springs and switch hook lift from the upper casing, all self-contained. The outer casing may now be removed, the transmitter head put back in position and the instrument stands as a complete operative telephone in which all spring contacts, cord connections, etc., are in full view, easily and instantly accessible. These cord connections are made to terminals fitted on a hard rubber block securely fastened to the frame on which the switch springs are mounted. Hard rubber is the only insulating material used. The contact springs are of german silver with pure platinum points, which when assembled by the inspector make long sliding contacts, keeping points clean and bright. These contact springs rest against stops under tension and, the hook lever being independently supported and operated by an auxiliary steel spring, the full elasticity of the contact springs is used in making perfect contacts. This switch hook acts directly on the contact springs and has no lost motion.

With the exception of the two platinum contacts of the switch springs, there are no unsoldered contacts between the desk terminals and the transmitter. This will be instantly appreciated by the practical telephone man. The "Flexiphone" will be supplied to the trade equipped for common battery, series or bridging magneto circuits, as indicated in the accompanying diagrams. This new telephone during the Electrical Trades Exposition in Chicago, January 14 to 26, will be exhibited in space 1, section E. Full information can also be obtained by writing to the company.



Circuits for Adapting the Flexiphone to Different Classes of Lines.

THE AMERICAN CONDUIT COMPANY reports so rapid and healthy a growth in its business that it has found it necessary to get larger quarters and has moved its New York office from 170 Broadway to 140 Nassau street.

THE SWEDISH-AMERICAN TELEPHONE COMPANY, Chicago, Ill., will be represented at the Chicago Electrical Show. Its space is No. 12, Section E, at which point telephone men are invited to gather.

THE COMMERCIAL ELECTRICAL SUPPLY COMPANY, St. Louis, Mo., announces the sale of a number of Vote-Berger telephones to the Western Union Telegraph Company to replace Bell instruments, which have been in use on the Western Union company's private lines from St. Louis to Kansas City and vicinity. These instruments were sold only after a careful and thorough test by the engineering department of the Western Union Telegraph Company.

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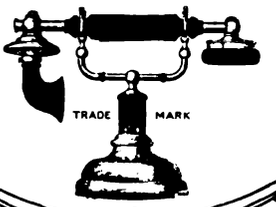

The agency for our products which has since 1897 been in the hands of Messrs. Smith & Hemenway Co., New York City, has been by mutual agreement, discontinued.

Such parts as may be required by users of our apparatus will from this date be supplied by the L. M. Ericsson Tel. Mfg. Co., Buffalo, N. Y., which company will be our only representative in the United States.

They will place on the market telephone and electrical apparatus of the same high standard which has characterized our products for the past thirty years.

We solicit for the Buffalo factory the kind consideration of the Independent Telephone Public and the opportunity to figure on its requirements.

Stockholm, December 1, 1906.
A.-B. L. M. ERICSSON & CO.
Axel Bostrom, Genl. Manager.

296 Broadway, New York,
December 1, 1906.

From and after this date the agency for the L. M. Ericsson & Co., Stockholm, Sweden, which has been in our hands since 1897, has been by mutual consent discontinued, and the business will be turned over to the L. M Ericsson Tel. Mfg. Co., Buffalo, N. Y.

To our many friends and customers we extend our heartiest thanks for their patronage and solicit a continuance of their favors for the L. M. Ericsson Tel. Mfg. Co., of Buffalo, N. Y., whenever they are in the market for telephone goods.

Very truly yours,
SMITH & HEMENWAY CO.,
J. F. Hemenway, Treas.
ERICSSON TELEPHONE CO.,
J. F. Hemenway, Treas.

Since the agency for A.-B. L. M. Ericsson & Co., Stockholm, Sweden, which has up to this date, been in the hands of Messrs. Smith & Hemenway Co., New York City, has been discontinued, we shall be pleased to supply to users of the L. M. Ericsson & Co.'s apparatus such parts as may be required.

We have organized an American Company, and built at Buffalo, N. Y., a large modern factory for the manufacture of a superior grade of telephone and electrical apparatus.

With suitable modifications in the construction of our apparatus, so as to conform with the American standards, we will use our own especially designed and patented devices, and will aim to maintain the same high grade of workmanship by which the Stockholm products have been recognized for three decades.

Our policy will be strictly independent. We have no connection with or interest in any Telephone Manufacturing concern in the United States, claiming or representing by misleading names and statements, to be associated with or related to us and the Stockholm House.

With the assurance that every customer will receive from our hands a "square deal," we beg to be included in the kind consideration of the Independent Telephone Public.

Buffalo, N. Y., Dec. 1, 1906.

L. M. ERICSSON TEL. MFG. CO.
Axel Bostrom, President. Klas Weman, Manager.

L.M.ERICSSON TEL.MFG.CO.
BUFFALO, N.Y.

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THE WEEK'S MESSAGES

NEW COMPANIES.

CRIPPLE CREEK, COL.—Articles of incorporation have been filed by the Crescent Telephone Company, with a capitalization of $5,000. The company proposes to construct and operate telephone lines between Cripple Creek, Divide and Florissant, and eventually to connect with points in Douglas, Park and Jefferson counties. The officers are: James D. Husted, president; Raymond Husted, vice president, secretary and treasurer; Joseph G. Long, general superintendent.

YAMPA, COL.—At a meeting recently held at Yampa, it was decided to organize an Independent telephone company, to be known as the Routt County Mutual Telephone Company. It is expected that this organization will take in all the mutual companies in the neighborhood of Yampa, Huggins, Pinnacle, Dunkley and Eddy, and possibly Hayden and Craig.

PALOMA, ILL.—The Paloma Telephone Company has been organized for the purpose of constructing and maintaining a telephone system in Paloma. Lines will also be built into the surrounding country.

ROCKWOOD, ILL.—The Ebenezer Telephone Company, Rockwood, Ill., has been incorporated with a capital stock of $500. The incorporators are Wilbur H. Morgan, Joseph M. Vickers and Lewis Harry.

PALMYRA, IND.—The Farmers' Metropolitan Telephone Company has been incorporated with a capital stock of $500. Among the incorporators are Lee Langford, Charles Ems and E. K. Hines.

DODGE CITY. KAN.—The organization of the Arkansas Valley Telephone Company has been practically completed. It has a working capital of $60,000, and the stockholders are business men in central and western Kansas. The company's lines will connect towns along the Atchiso, Topeka & Santa Fe as far west as Garden City, with eastern jobbing centers.

M'DONALD, KAN.—Articles of incorporation have been filed by the McDonald Telephone Compa.y of McDonald.

MAYWOOD, NEB.—Articles of incorporation have been filed by the Farmers' Co-operative Telephone Company, and the following officers have been elected: A. C. Barry, president, and H. H. Cleveland, secretary. The capital stock is given at $1,500.

RALEIGH, N. C.—The Capital City Telephone Company has been incorporated at Raleigh.

OKARCHE, OKLA.—The Hoebing Telephone Company, of Okarche, has been incorporated with a capital stock of $6,000. The incorporators are T. F. Hanson, John W. Thiems, of Calumet; John Hoebing, Mat Wiemel, G. D. Lovell, Henry Frederick and Charles Thiems, of Okarche.

SHERWOOD, ORE.—The Sherwood Mutual Telephone Company, with principal offices at Sherwood, has been incorporated with the following incorporators: J P. Young, L. S. McConnell and F. Langer.

SPOTTSYLVANIA, VA.—The Spottsylvania Telephone Company has been incorporated at Spottsylvania with a capital stock of $10,000. It is its intention to construct telephone lines in Spottsylvania and adjoining counties. The incorporators are G. W. Perry, J. P. H. Crismond, T. A. Harris T. W. Dew, W. B. Warren, C. R. Coleman, W. G. Dillard, N. L. Mills and A. H. Crismond.

WOODLAND, WASH.—Articles of incorporation have been filed by the Lewis River Independent Telephone Company, of Woodland. The new company has an authorized capital of $5,000, and the incorporators are R. D. Lawson, J. S. Fields and J. W. Strong.

MATEHUALA, MEX.—An Independent telephone company has been incorporated in Matehuala, State of San Luis Potosi, under the name of Benito Juarez. It is its intention to build lines in the city of Matehuala.

FRANCHISES.

HERRIN, ILL.—The Farmers' League Telephone Association, which operates in all the principal towns in Union and Jackson counties, and a part of Johnston and Williamson, has applied for a franchise to build lines in Herrin.

LA HARPE, ILL.—The city council has granted a franchise to the Farmers' Mutual Telephone Company to install and operate an exchange in La Harpe.

ST. JOSEPH, MICH.—The Lake Shore Telephone Company, which was recently granted a franchise by the city council of Benton Harbor, has made application for a similar franchise at St. Joseph, Mich.

MONTROSE, PA.—The town council has granted a franchise to the Northeastern Telephone Company to construct lines and establish an exchange at Montrose.

DEEP CREEK, WASH.—Application for a franchise to construct lines in the direction of Medical Lake has been made by the Deep Creek Telephone Company.

FINANCIAL.

ABINGDON, ILL.—The Mutual Union Telephone Company has increased its capital stock from $10,000 to $15,000.

HILLSBORO, ILL.—The capital stock of the People's Mutual Telephone Company has been increased from $10,000 to $15,000.

PARIS, ILL.—The Indiana Telegraph & Telephone Company, of Dana, Ill., has filed a trust deed to secure a bond issue of $50,000, made to the Mercantile Bond & Trust Company of Chicago. The Dana line connects with the local telephone system at Chrisman, and the object of the bond issue is understood to be the general improvement of the system.

CLEVELAND, OHIO.—The Cuyahoga Telephone Company has declared a divident of 1½ per cent on its preferred stock, for the quarter ending December 31, 1906, payable February 1, 1907, to all stockholders on record January 20, 1907. The common stock dividend of 1 per cent was also declared, payable January 20, 1907, to all stockholders on record January 12, 1907.

COLUMBUS, OHIO.—At a meeting of the board of directors of the Columbus Citizens' Telephone Company, the regular quarterly dividend of 1½ per cent was declared on the capital stock of the company, payable January 1; and the regularly quarterly dividend of 1¼ per cent on the stock of the Franklin County Telephone Company, payable on the same date.

MONROE, WIS.—The directors of the Monroe Telephone Company have declared a dividend of three per cent on the earnings of the past six months, payable February 1, 1907.

COMBINATIONS.

LEESBURG, IND.—The Wilmot Telephone Company, of Cromwell, has been acquired by J. E. Armstrong, of Leesburg, and it is the intention of the new manager to make many improvements in the plant.

RISING SUN, IND.—The farmers of Ohio and Switzerland counties have united their lines and will run a trunk line to Rising Sun.

MOOSE LAKE, MINN.—The Consolidated Telephone Company has acquired the Moose Lake Telephone Company's system both at Moose Lake and Barnum.

PURDY, MO.—The Purdy Telephone Company and the Enterprise Telephone Company have formed a merger, and stock certificates will be issued by the Purdy Company.

ELECTIONS.

COLUSA, CAL.—The Colusa County Telephone Company has elected the following officers: C. L. Schaad, president; W. T. Rathburn, vice president; J. Morris Jones, secretary; Bank of Williams, treasurer; directors, C. L. Schaad, George C. Comstock, W. T. Rathbun, J. F. Campbell and Oscar Robinson.

HANSELL, IOWA.—At the annual meeting of the Inghan Township Telephone Company, held at Hansell, the following officers and directors were elected: President, V. J. Blackford; vice president, Wm. Held; secretary and treasurer, T. L. Wells; directors, A. C. Wolf, N. B. Claypool, Wm. Anderson, A. D. Allen and W. N. Titus.

PONTIAC, ILL.—The Weston Telephone Company has elected the following officers: W. Brady, president; C. E. Graves, secretary.

LE MARS, IOWA.—The Plymouth County Telephone Company has elected the following officers and directors: A. C. Colledge, president; F. A. Post, vice president; O. L. Loudenslager, secretary and treasurer; C. F. Lettow, superintendent; A. C. Colledge, F. A. Post, E. A. Datlon, I. S. Mahan, O. L. Loudenslager, directors.

VINTON, IOWA.—The following officers have been elected by the Bear Creek Telephone Company; John Meggers, president; J. M. McKee, secretary; Elmer Nahloz, treasurer.

ALDEN, MINN.—The officers of the Alden Telephone Company are J. A. Hazle, president; B. C. Hazle, secretary and treasurer.

BYGLAND, MINN.—The Bygland Telephone Company has elected the following officers and directors: President, Andy Grundyson; vice-president, Oscar Wick; secretary, Ludwig Olson; directors, Gunder Nomland, T. A. Torkelson, Thomas Logan, John Logan, T. A. Berland, Asmund Asmundson and Jos. Crary.

MABEL, MO.—At a recent meeting held by the Mabel Telephone Company, the following officers and directors were elected: President, A. J. Metcalf; treasurer, Richard Hudson; secretary, F. H. Blackburn; directors, A. J. Metcalf, Richard Hudson, F. H. Blackburn, D. S. Brooks and J. A. Logue.

BINGHAMTON, N. Y.—The Delaware Valley Telephone Company has elected the following officers: C. B. Teed, of Trout Creek, president; E. E. Crane, of Sanford, vice president; Le Roy McCulley, of Nineveh, secretary; A. I. Colvington, of Afton, assistant secretary, and J. W. Smith, of North Sanford, treasurer.

JAMESTOWN, N. Y.—The following officers and directors have been elected by the Chatauqua Telephone and Telegraph Company: President, G. W. Appleby; vice president, A. H. Appleby; secretary and treasurer, A.

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Standard Vitrified Conduit Company

B. S. BARNARD, President.

MAIN OFFICES—39-41 CORTLANDT ST.—NEW YORK, N. Y.

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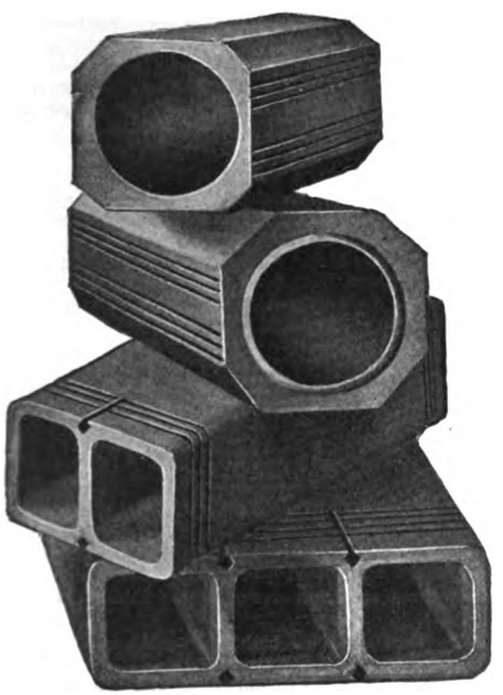
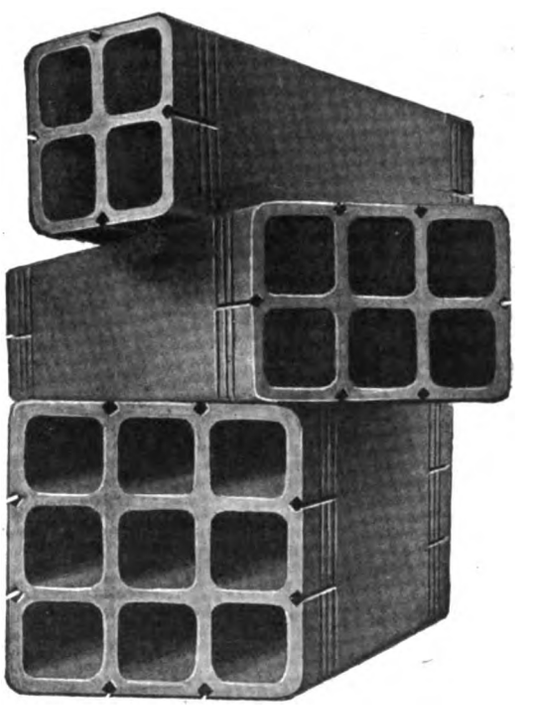
MULTIPLE DUCT VITRIFIED CONDUITS

OUR FACTORIES ARE THE LARGEST IN THE WORLD
ANNUAL CAPACITY, 40,000,000 FEET OF CONDUIT



SINGLE DUCT
3½ inch Round Bore
3½ " " "
4 " " "
3½ " Square "
3½ " Round "
(Socket Joint)



MULTIPLE DUCT
2, 3, 4, 6 and 9 Duct
3½ inch Square Bore
3½ " " "

MULTIPLE DUCT
2, 3, 4 or 6 Duct
3½ inch Round Bore

OUR STANDARD MANDREL SUPPLIED FREE TO OUR CUSTOMERS

A few of the Big Contracts placed with us:

Stromberg Carlson Telephone Mfg. Co.
Niagara Falls Power Co.
Charles E. Phelps, Jr., Baltimore, Md.
New York Edison Co.
Brooklyn Edison Co.
Philadelphia Electric Co.
Norfolk Railway & Light Co.
Montreal Light, Heat & Power Co.
Bell Telephone Co., U. S. A.
Bell Telephone Co., Canada
Pennsylvania R. R. Tunnel, N. Y. City
Trolley Tunnels, N. Y. City
Rapid Transit Subway, N. Y. City

ANNUAL CAPACITY:

40,000,000 Duct Feet

WRITE FOR CATALOGUE

Please mention THE AMERICAN TELEPHONE JOURNAL when writing to ADVERTISERS.

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THE WEEK'S MESSAGES

H. Appleby; directors, G. W. Appleby, A. H. Appleby, Thomas Crane, J. H. Wright, D. D. Dorn, A. J. Peterson and F. J. Davis. The company's office is at Watts Flatts, and its exchange at Kennedy.

BLOOMINGVILLE, OHIO.—At a recent meeting of the Bloomingville Telephone Company the following officers were elected: F. P. Schnee, president; H. F. Byington, manager; J. V. Ramsdell, secretary.

BELLINGHAM, WASH.—The Farmers' Mutual Telephone Company has elected the following directors: E. Brown, Custer; W. L. Galbraith, Lynden; P. D. Harkness, Everson; James Baily, Nooksack; L. W. Norton, Blaine; J. N. Miller, Ferndale; L. G. Van Valkenberg, Sumas. Mr. Brown was re-elected president.

LIVINGSTON, WIS.—The Grant County Telephone Company has elected the following officers and directors: President, Fred Biddick; vice president, Henry Kemper; secretary and treasurer, Ira W. Griswold; directors, Stephen Dennis, C. A. Iverson, George Bickford, Henry Kraemer, John Thompson, James Harris, Carl Reichert, Fred Weinbrenner, William Martin, Joseph Griswold, Frank Smith and W. C. Livingston.

PERSONAL.

FRANK BRACELIN, Jr., has recently taken charge of the Northwestern Telephone Exchange Company's office at St. Cloud, Minn.

ARTHUR E. CALDWELL has been promoted to the position of district wire chief of the Sunset Telephone Company, with headquarters at San Jose, Cal.

A. D. EVANS has been made district fire chief, with headquarters at Janesville, Wis., by the Wisconsin Telephone Company.

M. T. GOODMAN has been elected manager of the Home Telephone Company at Clarksville, Texas.

JAMES W. HOWATT, who for the past two years has been manager of the St. Cloud exchange of the Northwestern Telephone Company, has been promoted to the position of superintendent of the district having its headquarters at Wadena, Minn.

G. V. REID, of Moosejaw, Saskatchewan, has accepted the position of superintendent of telephone and electric light plants at Kenora, Ontario.

DAN TAFT has resigned from the telegraph department of the Pennsylvania Railway to accept a position with the Greene County Telephone Co. at Waynesburg, Pa.

MISCELLANEOUS.

ARMADA, MICH.—Because of a proposed increase in rates by the Michigan State Telephone Company (Bell) the business men of Armada and over one hundred farmers are endeavoring to make arrangements with the Independent Company and sever their connections with the Bell Company.

BRADSHAW, NEB.—The Bradshaw Telephone Company is moving its Arborville central office to Polk.

HAVANA, O.—The incorporators of the recently organized Havana Telephone Company are Geo. G. Van Horn and others, and the capital stock is placed at $5,000.

WARRENTON, VA.—The plant of the Warrenton Telephone Company has been purchased by Paul C. Richards, and it is the new owner's intention to make many improvements and extensions in the system.

FREDERICK, MD.—The Frederick County Telephone and Telegraph Company has arranged for a connection with the Loudoun County (Va.) Telephone Company.

HEREFORD, TEXAS.—The Hereford Telephone Company has passed into the possession of Claude J. Blain and others of Trenton, Mo.

SPOKANE, WASH.—The Home Telephone Company is to have long distance connections between Spokane and the Pacific Coast points, arrangements having been made with the Puget Sound Telephone Company, by which the Spokane branch will be connected with points on coast from Seattle to San Francisco.

BETHEL, VT.—The Strafford Telephone Company, of which W. A. Perkins is an active director, is a rapidly growing Independent telephone company. It now has three hundred and fifty subscribers, and through arrangements with other connecting companies is enabled to give a free exchange of service with central offices hteing a total of 6,000 telephones.

GUELPH, ONT., CAN.—The Stark Telephone & Power Company of Toronto has offered to render all the assistance in its power towards the establishment of a municipal telephone system at Guelph.

New Construction in the Field

CENTRAL VILLAGE, CONN.—The Consolidated Railroad Company is considering the advisability of installing telephones at each switch along its line between Central Village and Webster for the purpose of directing the movements of its cars.

BONDVILLE, ILL.—New lines are being constructed by the Bondville Telephone Company.

KEWANEE, ILL.—Many improvements are being made in the lines of the Kewanee Home Telephone Company.

GEORGETOWN, IND.—It is the intention of the Independent Long Distance Telephone Company to establish an exchange at Georgetown.

CEDAR RAPIDS, IOWA.—The Cedar Rapids & Marion Telephone Company expects to rebuild its local exchange at a cost of about $40,000.

PIKEVILLE, KY.—The Eastern Kentucky Home Telephone Company has built a line from Pikeville, Ky., via Elkhorn City, to Clintwood, Va., giving direct communication with Wise, Morton, Coebum, Big Stone Gap, Stonega, Bristol and Knoxville, Tenn., and Whitesburg, Ky. Long distance connections will be established at Bristol, Knoxville and Big Stone Gap.

BATTLE CREEK, MICH.—The Citizens Telephone Company contemplates the erection of new lines in Battle Creek.

HONOR, MICH.—The lines of the Benzie County Telephone Company are being extended in Honor.

PINCONNING, MICH.—The Northeastern Telephone Company contemplates making many extensions in its system. A line will be erected at once from Pinconning to Crump, and later lines will be built to Mt. Forest, Rhodes, Bertie, Whitefeather, Worth and Gladwin.

SPRINGFIELD, MINN.—To take care of its rapidly increasing business, the Farmers Citizens Mutual Telephone Company expects to install a new switchboard at Springfield.

SPRINGFIELD, MO.—Construction work on the Springfield Home Telephone Company's plant is being carried on rapidly, and it is estimated that the exchange will be in operation by June 1, 1907.

GREAT FALLS, MONT.—The Independent Telephone Company of Butte, which secured a franchise at Great Falls some time ago, is to commence the construction of its system. It is the company's intention to install a thoroughly up-to-date plant at Great Falls, and to effect connections between that city and Butte, Anaconda, Helena and other cities. It is estimated that about $1,500,000 will be spent in these improvements.

BLUE HILL, NEB.—The Glenwood Telephone Company is considering the advisability of installing a new switchboard.

VALATIE, N. Y.—The Valatie Telephone Company, which has recently installed a new switchboard to take care of its increased business, expects to make other improvements in its system.

COLUMBUS, OHIO.—The police department is considering the advisability of expending $15,000 on a new telephone system.

MINERVA, OHIO.—New lines are being strung by the Minerva Telephone Company.

GROVE CITY, PA.—New lines are being built by the Mercer County Telephone Company at Grove City.

HUDSON, PA.—Additional lines are being built by the Standard Telephone Company at Hudson.

MT. PENN, PA.—The Consolidated Telephone Company is constructing a line through Mt. Penn.

PENNSVILLE, PA.—Lines to Pennsville are being built by the Tri-State Telephone Company.

WHITE HORSE, S. D.—A telephone line is to be constructed from the Cheyenne River agency to the subagencies at White Horse and Cherry Creek.

JONESBORO, TENN.—The Home Telephone Company is at work on its system at Jonesboro.

EUREKA, UTAH.—A new central office is to be opened by the Utah Independent Telephone Company at Eureka. It is the company's intention to extend its lines to other points in the near future.

BELLINGHAM, WASH.—The Farmers' Mutual Telephone Company is constructing a line to Lynden. It also contemplates the erection of a line from Ferndale to Laurel and Shettlers Corners, and also one to Maple Falls.

COLVILLE, WASH.—A farmers" telephone line has been built from Colville to Echo, and an exchange will be established at the latter city.

BRIDGEPORT, W. VA.—Additional wires are being strung between Bridgeport and Bellaire by the Belmont Telephone Company.

WHEELING, WEST VA.—It is the intention of the National Telephone Company to install new equipment in its new offices.

AMHERST, WIS.—The Amherst Mutual Telephone Company is extending its lines from Amherst to Custer via Fancher.

WINNIPEG, MANITOBA, CAN.—The Manitoba Cabinet has called for tenders for the construction of one thousand miles of telephone lines in this province, under the mandate authorizing public ownership of the system. The contract will involve the expenditure of several millions of dollars, and the funds will be provided through 20-year debentures.

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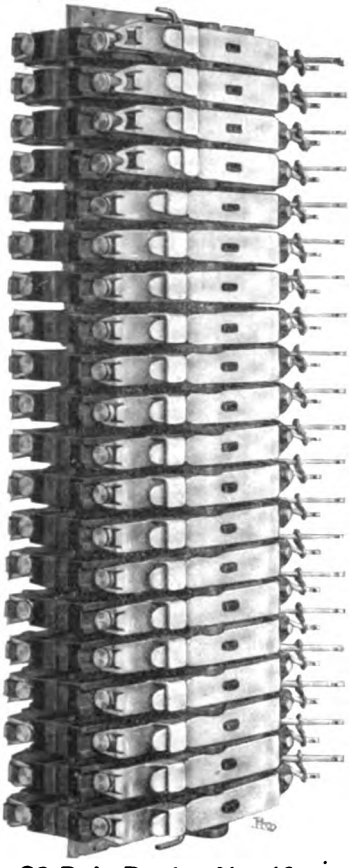

20 Pair Bank No. 10.

Cook's No. 10 Protector

COOK'S No. 10 Protector is so radically different in principle and design from previously existing types of switchboard protective apparatus, and has so many vital points of improvement, that from an engineering standpoint, it belongs in a class by itself. The following features alone are enough to recommend it to every careful, conservative, conscientious telephone engineer:

1. *The heat coil is not made of wire; it cannot burn out or short circuit.*
2. *There are no loose contacts in the circuit.*
3. *There cannot be a defective coil in the circuit.*
4. *The springs of each pair are separated and insulated from all adjacent springs.*
5. *No bolt connections are used to transpose the line and the switchboard terminals; consequently there can be no loose connection in the circuit.*

Cook's No. 10 Protector is a resoldering but not a self-soldering protector.

It is mechanically and electrically simpler and better than *any* protector on the market.

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14	"	"	1	"	"
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28	"	"	1	"	"

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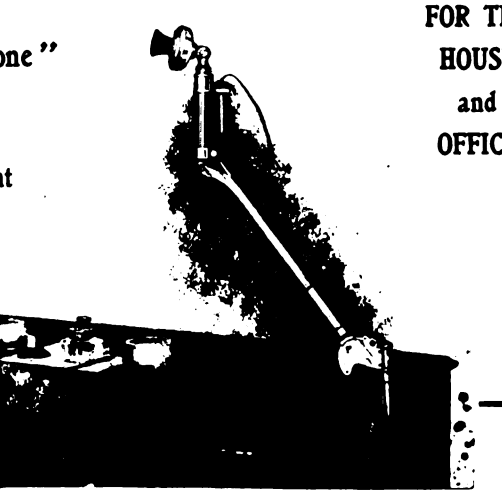

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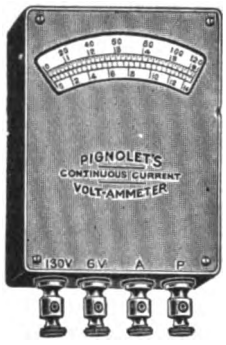
LOOKING FOR TROUBLE?



Suppose you have a line in trouble—grounded or open. You don't know the exact location, but you send out a troubleman to hunt it up and clear it. It may take him an hour or a day. Meanwhile the subscriber is getting hot under the collar and saying things about telephones in general and yours in particular.

If you have a Pignolet voltmeter or volt-ammeter you can determine the approximate location and also get an idea of the nature of the trouble. With the information your troubleman can find the fault in jig time, and you will have prevented the subscriber kicking by giving him service at the earliest possible moment.

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TELEPHONE MADE

with all connecting wires, binding posts and terminal screws fully concealed

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In many cases poles can be shipped by car-ferry, making possible a great saving in cases of shipment to Eastern points.

We are wholesalers exclusively, shipping in car lots only.

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MANUFACTURERS OF
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LOW PRICES PROMPT SHIPMENTS
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40,000 IN STOCK NOW. 100,000 TO 150,000 BY APRIL 1st
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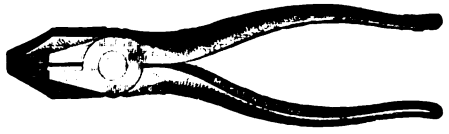

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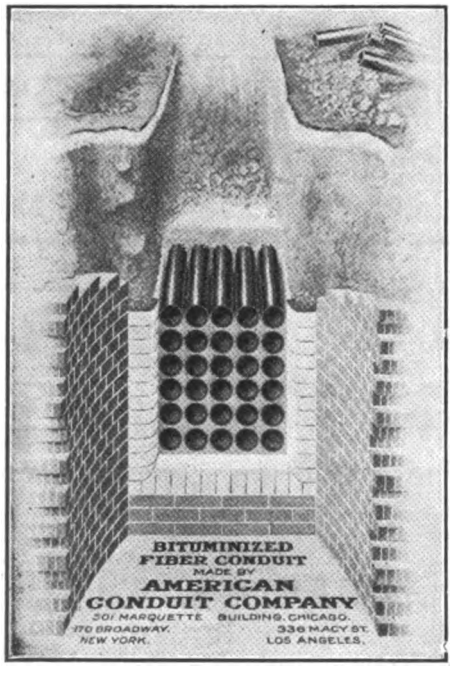
Use only genuine Klein's. They are the product of years of experience and have stood the test of time.
MATHIAS KLEIN & SONS - CHICAGO, ILL.



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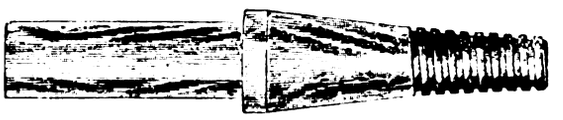
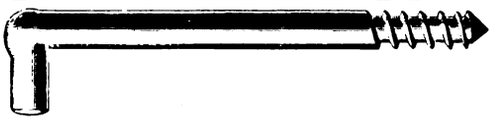
the live ones but  **your faith**

to a STAR (not operatic, but supply house) and you

will be taking  **s in the [redacted]right**

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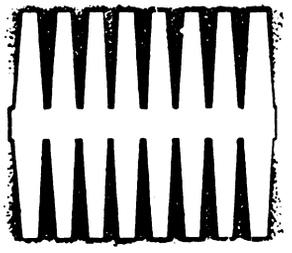

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The active material cannot fall out, and the plate retains its initial capacity to the extreme limits of long life.

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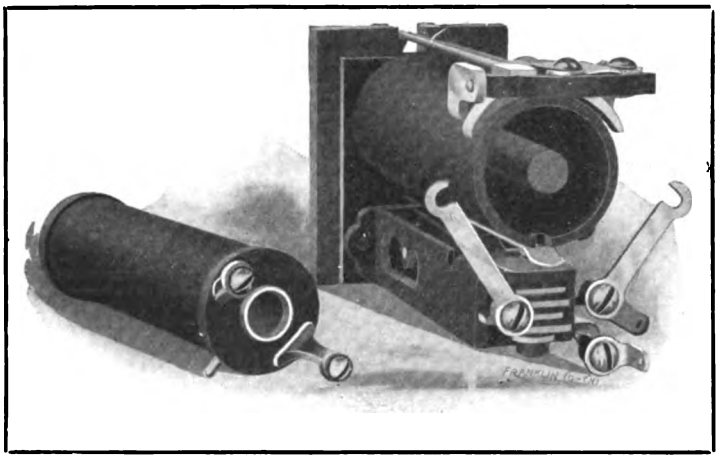
Our MAGNETO SWITCHBOARDS and APPARATUS embody many REFINEMENTS in design and construction such as—

The DROPS besides being self restoring are so designed that the coils may be easily and quickly removed without disturbing their magnetic circuits or mechanical adjustments.

The JACKS have platinum pointed contacts to cut off the drop windings from the line and are arranged so as to be removable from the front of the switchboard.



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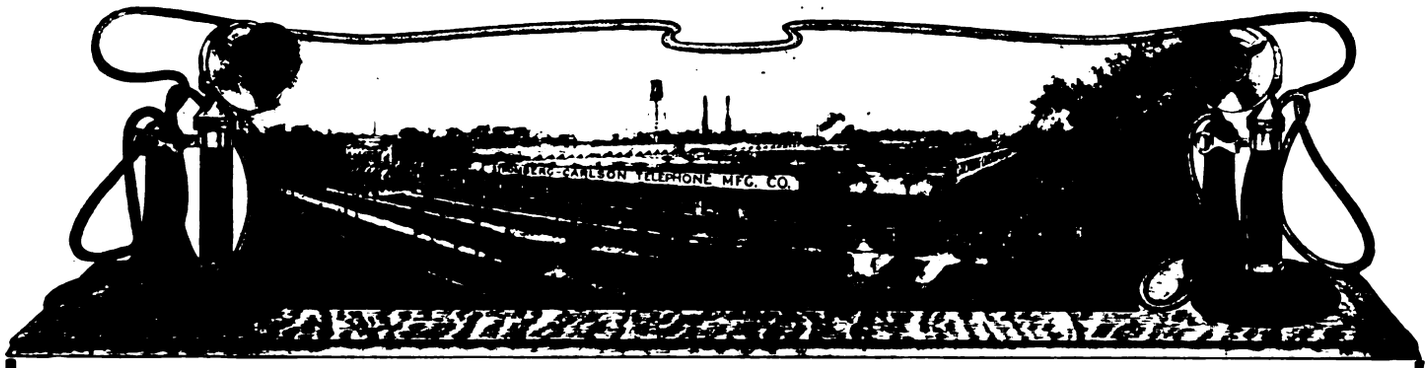

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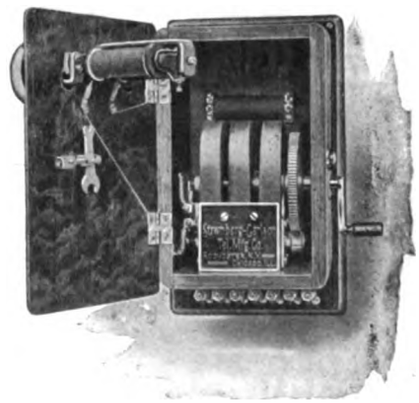
THESE features are essential, they assure good service and very materially increase the value of your investment. The Magneto forms a very important part in every Generator Call Telephone. The cuts shown herewith illustrate magnetos of the highest quality and greatest efficiency; they are most powerful and will successfully ring the telephones on the longest lines with the greatest number of instruments installed. Existing conditions have been carefully considered and great care and attention have been given to construction and design, with the result that our 5-bar Bridging Generator will ring over a line offering 100,000 ohms, which is much greater than the heaviest loaded rural party line.

Powerful 5-bar Bridging Generator.

Generator and Extension Bell.

Hand Generator mounted in Oak or Walnut Woodwork.



Generator and Extension Bell Open.

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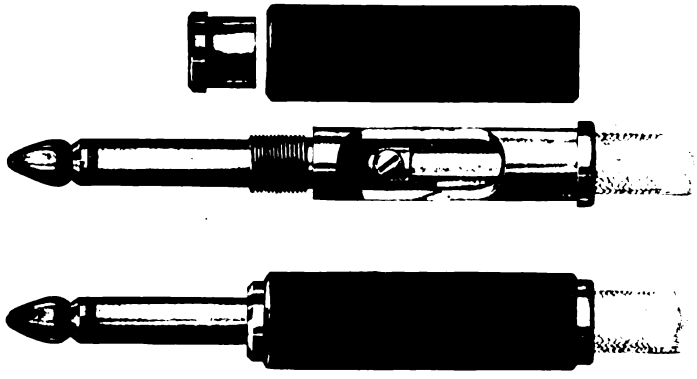
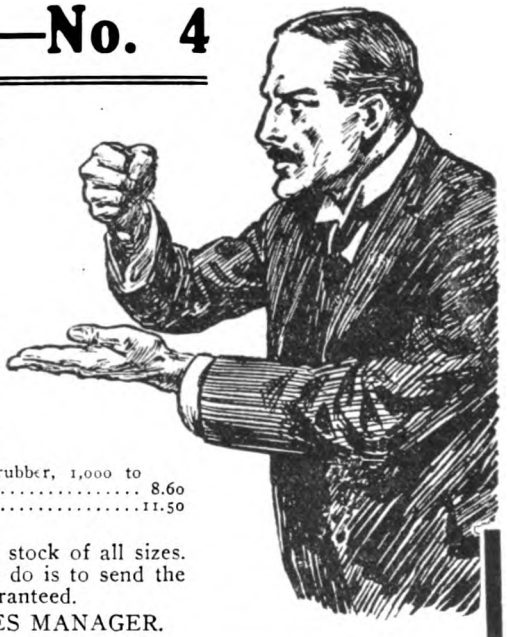


LITTLE THINGS THAT COUNT

The sleeve of the plug is loose, thus saving wear on cords. The tip connection is made within the body by a screw clamping the tip conductor of the cord. Rubber insulation makes short circuits impossible. The sleeve connection is made by turning back the sleeve conductor of the cord and screwing the end into the plug. The thread at this end is deep and coarse, making a strong perfect connection. Our catalogue describes this plug.

MONARCH TELEPHONE MFG. COMPANY, CHICAGO U. S. A.

Talks With The Buyer—No. 4



The number of answers that I received to my last talk, asking for free samples of our Ajax battery with which to make test, encourages me greatly, answers having come from great distances. The Ajax battery offer is still open; read my last talk. Now I want to call your attention to our especially attractive prices on

Rubber Covered Telephone Wires

By the placing of contract for an enormous quantity we were enabled to secure, before the advances, a particularly attractive price, of which we are giving the benefit to our customers. Prices will talk better than words. Here are a few:

No. 532, No. 19 gauge single conductor plain rubber, no braid, lots of 1,000 to 5,000 ft., per M.....$3.25
No. 533, No. 19 gauge single conductor saturated braid, 5/64 rubber, 1,000 to 5,000 ft., per M..... 4.25
No. 18, 3/32, 1,000 to 5,000 ft..... 5.55
No. 534, No. 19 gauge rubber conductor, 5/64 plain rubber insulation, no braid, one red, one black, 1,000 to 5,000 ft., per M..... 6.50
No. 538, No. 19 gauge double conductor, braided, one conductor with tracer, 5/64 rubber, 1,000 to 5,000 ft., per M..... 8.60
No. 18 gauge, 3/32 insulation, otherwise same as above.....11.50
No. 539, same as No. 538 except saturated braid for outside use; same prices.

The wire is highest quality. We carry an enormous and well assorted stock of all sizes. I don't need to talk very much about wire at such prices. All you have to do is to send the orders in. Better do it now. Add the other goods you need—prices guaranteed.

THE SALES MANAGER.

CENTRAL TELEPHONE & ELECTRIC CO., Makers of High Grade Apparatus Dealers in Telephone Supplies **St. Louis AND Dallas, U. S. A.**

EVERY COIL

of **Roebling Double Galvanized Telephone Wire** bears a tin tag and lead seal upon which the word "**Roebling**" is stamped.

Don't accept Wire without the **Roebling Seal.**

JOHN A. ROEBLING'S SONS CO., - TRENTON, N. J.

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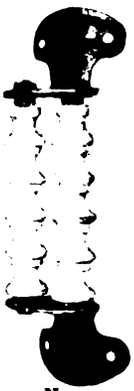
For Distributing from Pole-House or Can-Top Direct to Telephone.

No. 1 comes in 5 to 8 pair racks.

No. 2 comes in 10 to 16 pair racks.

Send for descriptive matter and prices.



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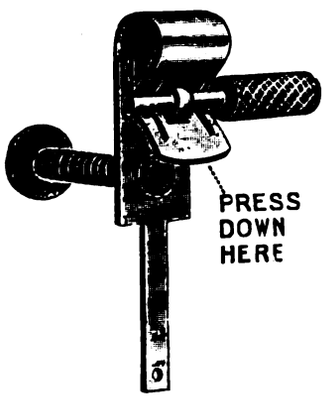
26-30 St. Clair St., TOLEDO, O.

A NECESSITY on distributing frames, dry batteries, and wherever permanent or temporary electrical connections are made THE No. 11 FAHNESTOCK SPRING BINDING POST was made to the special order of a large telephone company. It has an extra long lug and is well suited for use on distributing boards and other places about an exchange. Manufacturers of the leading dry batteries will supply their cells fitted with Fahnestock post without extra charge.



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FAHNESTOCK ELECTRIC CO.

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U. S. COMBINED

Cash Register and Pay Station

[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE

United States Coin Register Co.

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FIBRE CONDUIT

For Underground Systems

Write for Catalogue.

THE FIBRE CONDUIT COMPANY,
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Boston Office, 110 State St. Chicago Office, 1760 Monadnock Bldg.

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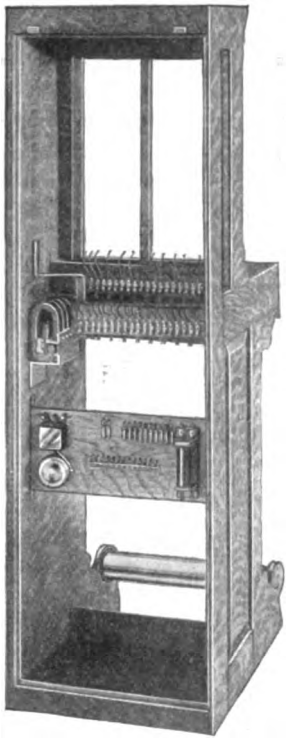
KELLOGG

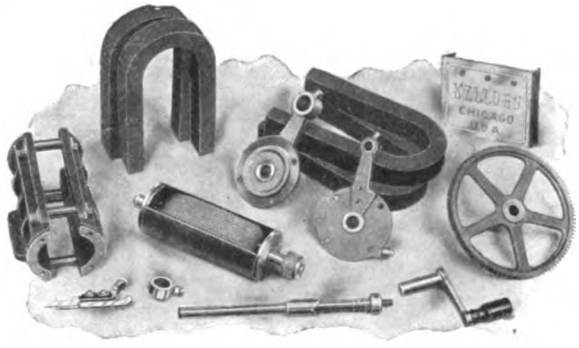
TELEPHONE APPARATUS



Magneto Switchboards

CONTAIN THE

KELLOGG HAND GENERATOR



The Kellogg generator is as nearly perfect, electrically and mechanically, as is possible to be made.

Our 4-bar generator has as great working power as any 5-bar generator of any other make.

THE ARMATURE has a shuttle-type core made from a special dense silicon iron, which is very soft and permeable. The steel shaft projections are attached to either end of the armature core by means of heavy brass discs, which accurately fit recesses turned in the end of the armature core, thereby insuring interchangeability and accurate running of the complete armature. This gives greater cross section of iron in the core proper, and larger winding space free from irregularities, than any other type.

THE WINDING is of best grade, silk-covered copper wire, wound smooth, without piling up at the ends. More iron is used and larger regular-shaped winding space is furnished, giving the armature better insulation, better insulation of winding, more output and greater durability than any other on the market.

THE TWO IRON POLE PIECES forming the frame and field of our generator are separated and securely fastened by four heavy brass posts, giving rigid construction, regardless of end plates, and allows poles to be bored out to gauge and always retain their relative positions.

THE END PLATES serve primarily as bearings for the running gear. They are most carefully and durably constructed, making it impossible for the armature to come off the centre and stick, even with the smallest clearance.

THE GEAR WHEELS are made from hard, tough brass in such a way that no matter how much worn the running is absolutely noiseless. The faces, are extra wide, cut with special shaped teeth.

THE FIELD MAGNETS are made of the best grade ½" x ¾" magnet steel, machine bent, uniformly tempered, copper-plated and oxidized. This is preferable to nickle, as the latter does not effectually prevent rusting the steel.

Note the generator is mounted in the rear of the board, with extension shaft, thus being out of the way of the operator's knees.

As our 4-bar generator will ring over most heavily loaded lines, we furnish same, unless our exceedingly powerful 5-bar generator is specified.

Write for "Bulletin No. 9A," which completely describes our Magneto Switchboards.

BRANCH OFFICES:

PHILADELPHIA, PA.	CLEVELAND, O.	KANSAS CITY, MO.	LOS ANGELES, CAL.
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KELLOGG SWITCHBOARD & SUPPLY COMPANY
CHICAGO, ILLINOIS, U.S.A.

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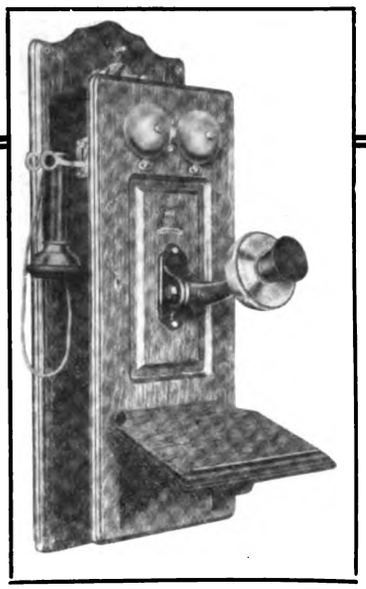
Sharpsville, Ind.,
Dec. 26, 1906.

Swedish-American Telephone Co.,
Chicago, Ill.

Gentlemen:

The 4 telephones recently shipped us have arrived and you are certainly to be complimented for making such superb instruments. The cabinets are fine and the wiring the finest I ever saw. Cutting the secondary and running the wires down for a condenser is a most happy thought. We will want some more soon.

Respectfully yours,
W. C. Turney,
Sharpsville Telephone Co.



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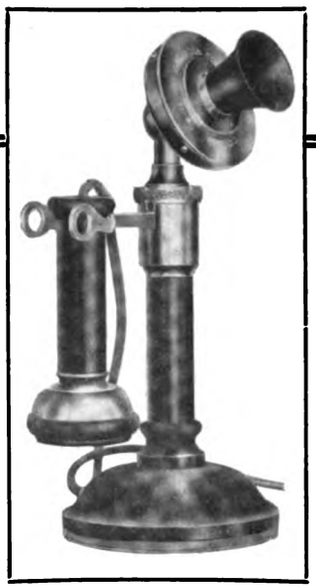

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Myrtle, Miss.,
Dec. 5, 1906.

Swedish-American Telephone Co.,
Chicago, Ill.

Gentlemen:

Replying to yours of Nov. 30th, will say that if I need any telephone goods will order from you. I am more than pleased with the goods I got from you, and I will say that I wish I had been dealing with you all the time for I believe you have the best telephone made.

Yours truly,
J. R. Johnson.

¶ You are bound to be pleased with our product. They please you because they please and satisfy your patrons. Do not contract for your 1907 telephone requirements until you get our proposition. It will prove to be decidedly interesting to you. Write us to-day.

SWEDISH-AMERICAN TELEPHONE CO., Chicago

Branch, 115 West 6th Street, Kansas City, Mo.

You Wouldn't Start a Horse Car Line

in this age of electric cars? Not if you wanted to make money out of the business of transportation.

Then why should you start a manual telephone exchange in this age of automatics, if you want to make money out of the telephone business?

The automatic system of telephony bears the same relation to the manual system that the electric car does to the horse car. It is the apotheosis of telephone development, as the electric car is of transportation development.

The automatic telephone system produces the best service more economically than indifferent service can be produced with manual equipment.

There is no more question as to the relative popularity of the automatic and manual telephone service where the two kinds are in competition than there is as to the relative popularity of the trolley car and the horse car.

And, as for the securities—the same comparison may be applied with the same results.

Our Automatic system has been adopted in the following cities:

Aberdeen, S. D.
Akron, Ohio.
Albuquerque, N. M.
Allentown, Pa.
Auburn, Me.
Auburn, N. Y.
Battle Creek, Mich.
Bellingham, Wash.
Berlin, Germany.
Buxton, Iowa.
Cadillac, Mich.
Champaign, Ill.
Chicago, Ill.
Clayton, Mo.
Cleburne, Texas.
Columbus, Ga.
Columbus, Ohio.
Dayton, Ohio.
El Paso, Texas.
Fall River, Mass.
Ferguson, Mo.
Grand Rapids, Mich.
Hastings, Neb.
Havana, Cuba.
Hazleton, Pa.
Hopkinsville, Ky.
Jonesboro, Ark.
Lake Benton, Minn.
Lewiston, Me.
Lincoln, Neb.
Los Angeles, Cal.
Manchester, Iowa.
Marianao, Cuba.
Marion, Ind.
Medford, Wis.
Miamisburg, Ohio.
Mount Olive, Ill.
New Bedford, Mass.
Oakland, Cal.
Ocean Park, Cal.
Pentwater, Mich.
Portland, Me.
Portland, Ore.
Princeton, N. J.
Richmond, Ind.
Riverside, Cal.
San Diego, Cal.
San Francisco, Cal.
Santa Monica, Cal.
Sioux City, Iowa.
South Bend, Ind.
Spokane, Wash.
Springfield, Mo.
St. Marys, Ohio.
Tacoma, Wash.
Toronto Jct., Can.
Traverse City, Mich.
Urbana, Ill.
Van Wert, Ohio.
Walla Walla, Wash.
Watch Hill, R. I.
Wausau, Wis.
Westerly, R. I.
Wilmington, Del.
Woodstock, N. B., Canada.

AUTOMATIC ELECTRIC COMPANY, VAN BUREN and MORGAN STS. CHICAGO U. S. A.

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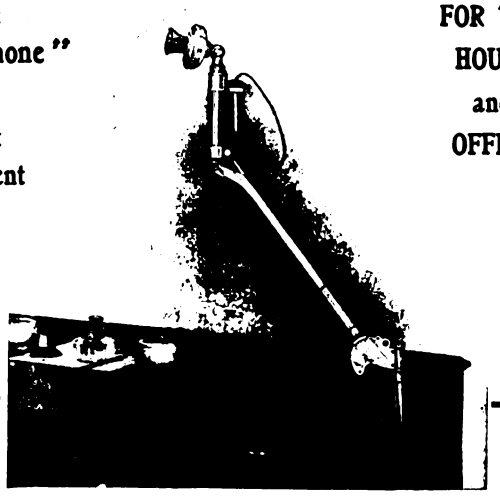
The "Flexiphone" A Perfect Instrument

FOR THE HOUSE and OFFICE



[U. S. and Foreign Patents Pending.]

Where you want it--When you want it--And never in the way

CUTS MAINTENANCE COST IN HALF

MAKES DIVIDENDS GROW

Self balancing in any position—Cannot Fall—No Breakage—No Cord Troubles.

The Switch mechanism is Perfect. All joints soldered excepting Platinum contact points.

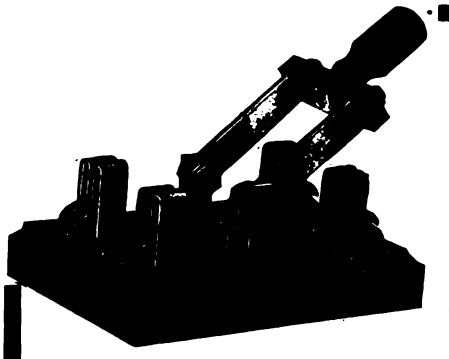
SIMPLICITY, QUALITY AND ACCESSIBILITY UNEQUALLED ANYWHERE.

Leading makers of standard instruments will supply the "Flexiphone" equipped with their own Transmitter and Receiver when desired.

SEND FOR FULL DESCRIPTION AND PRICES.

OLIVER MFG. CO., 424 Library St., Philadelphia, Pa.

Designers--Patentees--Makers



Save Yourself Trouble and Expense

By using Double Throw Switches for your first switchboard. After you have got your bearings and know about how many lines you have in service, you can substitute a regular switchboard and the switches will be available for other purposes. The best switch for the purpose is

A TRUMBULL ALL COPPER SWITCH

It makes positive connections and cannot get out of order. It is carefully made according to a new and exclusive design which overcomes all the troubles to which the ordinary switch is subject.

The switchboard employing these switches is the most economical form ever devised. It can be built and operated by a novice and is absolutely free from all troubles requiring technical knowledge for their solution. If you will drop us a line to show you are interested, we will send you full particulars and quote prices that will convince you this is the type of board you need for a start.

TRUMBULL ELECTRIC MFG. CO.

618 Woodford Ave., PLAINVILLE, CONN.

THE CALCULAGRAPH

Should be on every toll switchboard. Most large companies are using it and indorse it highly. Because it saves its cost in about six months and then keeps on making dividends.

It records the actual time a line is used.

IT MAKES NO CLERICAL ERRORS.

Write for Booklets

CALCULAGRAPH CO.

1437 [illegible]lers' Building New York City

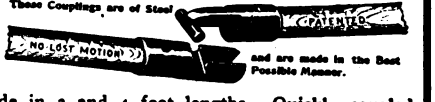
[illegible]: Northern Electric and Manufacturing Co., Ltd., Montreal.

Patented April 24. 1900.

Cope's Patent Cable Rack and Conduit Rods

FOR MANHOLES, VAULTS AND DUCTS.

Cheapest, strongest and most convenient CABLE RACK made. Costs but little more than wood and is indestructible, more durable and convenient.



CONDUIT RODS are made in 3 and 4 foot lengths. Quickly coupled and uncoupled, they are the best rod on the market.

T. J. COPE *ENGINEER AND CONTRACTOR*

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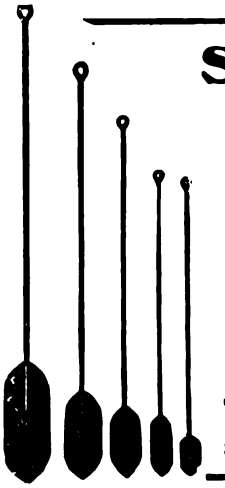
Manufacturer of all tools appertaining to Underground Construction.

Write for catalogue describing Cope specialties.



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PASS UP

Those "*Procrastinatious*" Habits

TO-MORROW, TO-DAY will be YESTERDAY

DO IT NOW!

Send us a Trial Order for One Dozen

Hercules Malleable Iron Anchors

We Will Prepay Freight. If Not Satisfactory, RETURN AT OUR EXPENSE

The W. G. Nagel Electric Co.

26-30 ST. CLAIR STREET TOLEDO, OHIO

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The American Telephone Journal

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VOLUME XV. SATURDAY JANUARY 12, 1907. NUMBER 2

Drawing in the New York-New Haven Underground Cable

(Continued from the Issue of Jan. 5th.)

By John Putnam.

(Illustrations from Photographs by the Author.)

GUIDING the wire rope, one may see in Fig. 6 the upright, mentioned near the close of the first part of this article, as it appears when actually in use. This view shows the means adopted for controlling the speed of traction. Two separate shafts are used, one carrying the pulley and belt from the engine, the other carrying the windlass, one turning the other by means of gearing. A comparison of Figures 4 and 6 would reveal two separate gearing downs of the speed, once by belt and once by gear wheels proper. Rubber boots with long legs may be mentioned as incidental equipment very useful in these cross country manholes, as there are no sewers and they are, in the spring, very likely to contain water.

Fig. 6. The upright in place.

Figure 7 shows the whole scene at the drawing in end, the sleepy horses, the busy gasoline engine, the intent engineer, and the watchful man near the upright projecting from the manhole. Almost as rapidly as can be described, a section of cable is pulled in, the apparatus packed up and moved on to another manhole, and the same process repeated. A mile to a mile and a half of cable a day was pulled in by these means. Supposing the average length of the cable section to be 500 feet, then it would mean sixteen reels of cable a day drawn into the ducts or one every half hour. In the expressive language of the times, this is "going some."

In conclusion, it may interest the reader to look at a picture of a piece of cable as shown in Figure 8. The various familiar objects surrounding it are there to give an idea of its dimensions. The ordinary glass insulator is of about the same diameter, while the sample piece of cable is slightly over a foot long, as comparison with the two-foot rule on the wall will reveal. This cable is of the regular dry core type, paper insulation, with twisted pairs wound in reversed layers. It contains 112 pairs of copper wires, 37 pairs of No. 13 gauge B. & S. and 75 pairs of No. 16 gauge, the No. 13 wires being in the middle. In the picture on the wall at the right of the cable hangs a piece of No. 12 N. B. S. hard

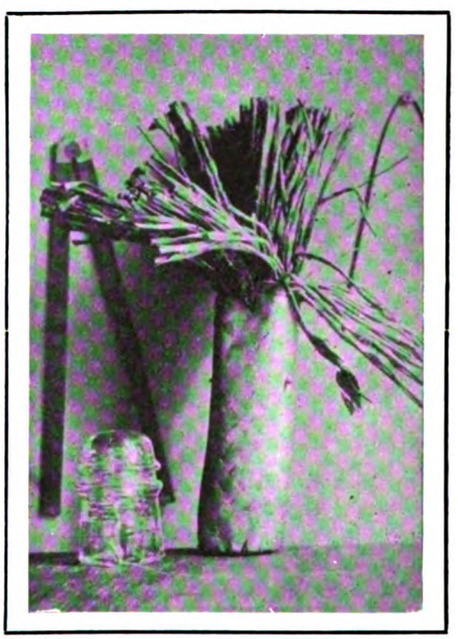

Fig 8. A sample of the New York-New Haven cable. Familiar objects show comparative size.

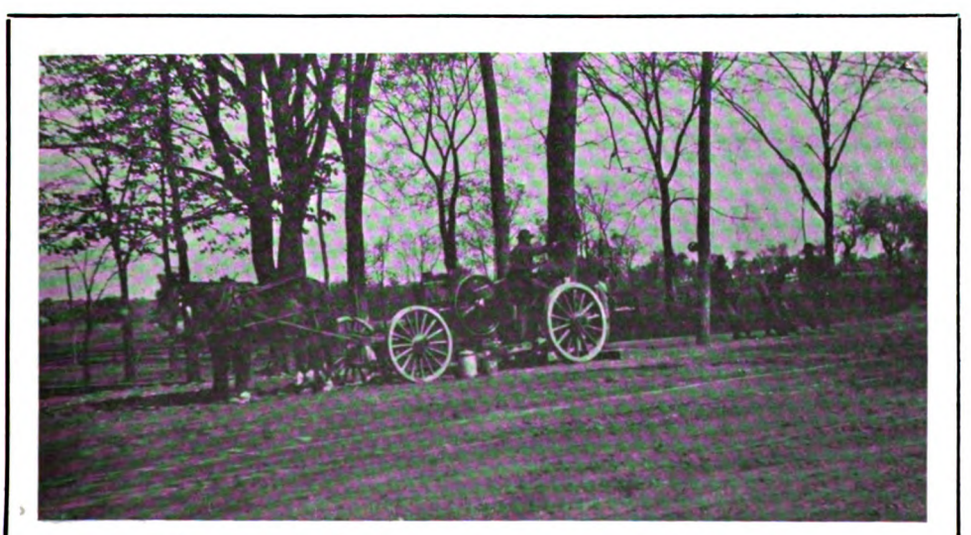

Fig. 7. The whole scene at the pulling end.

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drawn copper line wire, and across it projects one of the No. 13 gauge cable conductors. In comparing the size of the two, care should be taken not to confuse the shadow cast by the No. 12 wire with the wire itself. It will then be realized that the No. 13 conductors of this cable are of pretty good size, especially when thought of in connection with the No. 22 gauge conductors of the ordinary short haul cable.

Such, then, is the method of pulling in cable by power generated in a gasoline motor. For the job in question, it was undoubtedly a very economical one, but for companies having a piece of cable to pull in now and then, it would hardly pay. In the latter case a good old horse hired from a neighboring livery stable or a couple of men of the husky variety, turning a windlass placed in a manhole, will continue to answer very well, and challenge all comers for economy, efficiency and adaptability to other pursuits when there is no cable to be pulled in.

Some European Telephone Statistics

THE figures given out by the departments having control of telegraph and telephone lines showing conditions at the end of the year 1904 have recently been made public by the governments of Hungary and Spain, and published by the *Journal Telegraphique*. These figures show that the development of these countries, as compared to corresponding areas in the United States, is very low; but the size of the systems is increasing with considerable rapidity. In Hungary the figures given out show that of exchanges in cities six were added during 1904, while the number of exchanges installed in small places brings the total number of new central offices up to 127, not counting the 16 small offices which do not form part of the government system. The total number of telephone stations in this country was during 1904 increased from 23,330 to 26,439, a total growth of 3,109 stations. This includes both pay stations and subscribers' stations. These figures are divided as follows for public telephones and ordinary subscribers' stations:

	Public Telephones.	Subscribers' Stations.
City	290	20,826
Interurban	9	11
Suburban	109	541
Departmental	705	3,038
For transmission of telegrams	17	....
	1,130	24,416

The number of telephone communications increased from 54,840,671 in 1903 to 63,319,263 in 1904, a gain of 8,472,592. In giving figures for long distance messages an interesting custom peculiar to this country is noted in the division of messages into "urgent" and "ordinary conversations." Of the former there were 28,058, while of the latter there were 727,495. In the same way local messages are divided into 61,946,956 transmitted between subscribers, and 108,034 transmitted between subscribers and pay stations. Of long distance international messages exchanged with Austria the numbers were as follows:

Urgent conversations outgoing	10,727
Urgent conversations incoming	10,977
Ordinary conversations outgoing	124,210
Ordinary conversations incoming	132,219

About eight thousand conversations coming under other classes also took place.

To Germany there were transmitted four urgent conversations and 931 ordinary; while of incoming messages from Germany there were received 37 urgent messages and 3,657 ordinary. It is said that the number of conversations for each person in Hungary was found to be 3.3, and the total revenue amount to Fr. 1,125,405 for conversations and Fr. 3,716.557 for subscriptions. The expense for maintenance of the lines includes that for keeping up the telegraph lines, and amounted to Fr. 1.833,909, with an additional amount of Fr. 56,682 for moving lines, etc.

In Spain the figures given out give a fair idea of the development throughout the country. At the end of the year 1904 the government operated eight systems in cities as follows: Cordova, Murcie, Mieres, Pola de Siero, Sama, Trubia, Leon and Escorial. The total number of subscribers for these eight exchanges was only 388, and the receipts amounted to 29,166 pesetas (a peseta being about one-fifth of a dollar). The trunk lines operated by the government brought in 25,094 pesetas. The total number of subscribers and pay stations in Spain at the end of 1904 is given as 18,575. A large number of telephone systems are operated by persons under concessions from the government, no less than 54 exchanges coming under this class. There are also 28 branch exchanges, and the number of subscribers connected to these systems is 15,594. The people holding these concessions pay to the city a tax of from 10% to 34% of the income from subscribers. In April, 1904, concessions were awarded for exchanges at Palamos and Martorel, subject to a royalty of 10% of the profit, which it is necessary to pay to the government. The following table will give an idea of the development of the principal exchanges, for which concessions were granted up to 1904:

Exchanges.	Number of subscribers.	Per cent. as revenue to State.	Price of subscriptions in pesetas.
Barcelona	3,010	33.75	180—300
Madrid	2,383	20.00	300
Bilbao	1,275	34.00	120—180
Valencia	1,097	31.50	250
Sabadell	439	22.50	125—240
Saragossa	419	20.00	100—360
Santander	396	12.00	90—500
St. Sebastien	333	21.00	180—300
S. Crux de Teneriffe	331	10.00	120—160
Toledo	294	16.00	90
Seville	265	10.00	200—300
Malaga	256	21.00	150—300
Valladolid	243	10.00	200—300
Carthagena	221	20.50	150—300
Grenada	217	10.00	150—500
Alicante	210	10.00	90—240
Las Palmas	171	12.00	200—300

Table Showing Number of Telephone Subscribers, etc., in Principal Cities of Spain.

The total receipts of the holders of these concessions in 1904 were 3,314,755 pesetas, of which the State took in taxes 809,081 pesetas. Besides the exchanges already mentioned there were at the end of the year 1904 seven telephone exchanges for official communications with 197 instruments connected with them; thirteen secondary telephone systems operating under special concessions; and 1,101 special lines carrying 2,234 stations, which yielded to the government a sum of 36,987 pesetas. In the northeastern part of Spain is a system under private control, which yields a revenue of 57,227 pesetas.

SUB-LICENSEE COMPANY IN PENNSYLVANIA DISCONTINUES CONNECTION WITH BELL LINES.

IN Edinboro, Pa., the Edinboro Telephone Company has for five years been connected with the lines of the Bell telephone company. At midnight January 1st the connection was severed, and the company which had formerly been operating under sub-license arrangements entered into an agreement for an exchange of service with the Union Telephone Company, of Erie, which is Independent. The Union Company has announced to its subscribers in Erie that conversation with Edinboro may now be carried on over direct copper metallic circuits belonging to the Independent company. This adds to the number of people available to the Erie company's subscribers the 210 people connected to the lines of the Edinboro company, which in turn derives the benefit due to its change to a strictly Independent condition.

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Independent Telephone Development*

By James B. Hoge.

FEELING the hopelessless of fighting the Bell single-handed, some of the prominent men in the Independent movement invited representatives of all the known companies in the United States to come together in Detroit, Michigan, on June 22, 1897, for the purpose of forming an organization for mutual protection. This organization was effected, and a substantial sum subscribed to defray the expenses of fighting the patent cases through the Supreme Court of the United States, if necessary. One after another of these cases were carried through and won by the Independent interests.

Telephone apparatus at the time the patents expired in 1894 was very crude, the service was slow and transmission unsatisfactory. To supply the widespread demand for apparatus, Independent manufacturing companies started up almost immediately, improvements were made on the apparatus, competition between the different interests put all on their mettle, and more was accomplished between 1896 and 1900 in the way of improving the apparatus and service, and extending the use of the telephone than had been done in twenty years previous. After establishing themselves in the smaller cities, the Independents extended their lines out into the country, reaching all the post offices in a county; then the farmers began to organize companies and build, bringing their lines into the different post office centres where exchanges were installed, each county becoming a net work of wires. This service has been constantly increasing, finances for its development being in most cases furnished locally, until to-day there is over three hundred million dollars invested in Independent telephone properties, with more than three and a half million telephones installed and several hundred thousand miles of long distance toll lines connecting the different exchanges. The people in many of the larger cities, where the Bell was furnishing telephone service, were slow to appreciate the advantages to be derived from competition. They realized very often that they were paying more than their service was worth, and that there was a great deal of room for improvement in both the service and treatment, but dreaded to burden themselves with two telephones, "the double telephone nuisance," as the Bell taught them to consider it. In many cases where the citizens were willing, in fact anxious to have an Independent exchange installed, they were prevented through the Bell's control of their chosen representatives, who sometimes placed their own pecuniary gain above the welfare of the people they were elected to serve.

James B. Hoge, President of the International Independent Telephone Association.

Sometimes the Independent companies, in the early days, after obtaining franchises were unable to develop their property in the face of the greatly reduced rates, or even absolutely free service promptly offered by the Bell Company, and were forced to retire or sell out to the monopoly. Wherever this has happened, with scarcely an exception, another Independent company has been formed, proper provisions being made to prevent a like occurrence. An example may not be amiss. A few years ago an Independent plant was installed at Portland, Oregon, and forced the Bell to reduce its rates and improve service; it was not strong enough, however, to withstand the continued attacks of the Bell company, backed by other corporations and political power in control, and finally sold out; rates were at once raised and service became unsatisfactory from an operating standpoint. On December 7, 1904, an application for another Independent franchise was presented, and after a fight which brought the matter into politics, upon the petition of 10,000 voters the matter was submitted to a vote of the people the following June. The result was 12,213 votes for and 560 against the franchise. Evidently the citizens of Portland prefer competition to monopoly after having tried both.

On November 6, the citizens of Omaha, Nebraska, at the regular election ratified an Independent franchise by a vote of 7,653 to 3,625. With Omaha added to the Independent list, the Bell's one claim to the toll service of the country surrounding it has disappeared, since in all of the territory tributary to Omaha the Independents outnumber the Bell. In Nebraska the Independents have approximately seventy-five thousand (75,000) telephones. In Iowa the Independents have over one hundred and eighty-five thousand (185,000), a total of two hundred and sixty thousand (260,000) in the two States; the Bell has only, approximately, eighty thousand (80,000) in the same territory. With Omaha built it will give the Independent companies at least forty thousand (40,000) additional telephones in the two States in three years, and completes the system in that section.

At the November election, Denver, Colorado, also voted in favor of an Independent franchise. Last summer one was granted at San Francisco, and within the last ten days the Independents have been given a franchise at Milwaukee. These cities, with Omaha, are the only ones of special consequence, except Cincinnati and Chicago, west of the Ohio River, where the Independents are not strongly intrenched or building. In Chicago a franchise has already been granted and the Independent company has over forty miles of tunnel under the city streets, this tunnel also being used for hauling freight. The telephone part of this property is controlled by a number of Chicago citizens and railway and telephone interests surrounding the city. It has lately been leased with all franchise rights to a syndicate of well known active Independent operators, who have completed their arrangements to see that it is fully developed, and Independent long distance connections given the numerous cities surrounding the metropolis, who have been clamoring vainly until now for such connections.

In other lines of business, competition has been the life of trade; the telephone business has not proved an exception. When the electric light was invented, many of the (artificial) gas companies that had been charging from $3.00 to $4.00 per thousand cubic feet were inclined to believe that their business was ruined. Forced by necessity, they began to study their economies, and by marketing their by-products and the introduction of new devices for the use of fuel gas, they were enabled to develop a day and night load, as well as a winter and summer load, which made it possible for them to reduce the price of gas to an average of $1.00 per thousand cubic feet, bringing it into competition with coal for cooking and heating. To-day there is practically no limit to the amount of light and heat required in this country. So it is with the telephone; there is more business in this country to-day than both systems can properly take care of, and the more rapid their development, the greater will the demand become until every one desiring telephone service has been satisfied—and who can say whether that condition will ever be reached?

There are approximately 7,000,000 telephones connected with both the Independent and Bell exchanges in the United States. If the development throughout the country was as great as in some counties of the central States, it would require at least

*Abstract from an address delivered before the Franklin Institute, Electrical Section, at Philadelphia, November 22, 1906.

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14,000,000 telephones, twice the number at present installed. Without competition, there would be less than 2,000,000 telephones in the United States at present; equipment would be crude, rates high, the service unsatisfactory, and the management arbitrary. The small towns and the rural districts and millions of residents and small business men in our cities would be deprived of the greatest convenience of modern times. Not only has competition as represented by the Independent companies offered lower rates, better service through the use of improved apparatus, more courteous treatment and developed territory hitherto untouched, but it has forced the Bell to do likewise in sheer self-defence. While installing its own 3,500,000 Independent instruments, competition has compelled the Bell to increase in eleven years to ten times the number of telephones it had in service at the expiration of its more than seventeen years of absolute monopoly.

Recognizing the necessity for improvement in telephone conditions, the government of Manitoba appointed a select committee to inquire into and report regarding the various telephone systems. A similar committee had been previously appointed by the Dominion Government and had held its sittings in Ottawa; testimony taken before it filled two large volumes of an average of about one thousand pages each. The Manitoba committee, after making a thorough investigation of its own, and carefully considering evidence presented before the Dominion committee, reported to their Assembly. This body, after careful deliberation, decided to take the necessary steps to enable the Manitoba Government to construct and operate its own telephone system, and to petition the Canadian Parliament and the Crown to permit the expropriation of the Bell Telephone Company's plant and to refuse an extension to that company's capital. The Honorable Colin Campbell, attorney-general of Manitoba, in a speech before the Assembly, attributed the telephone legislation "to the growth of the Independent telephone companies in the United States, to the costly and limited service of the Bell Telephone Company, and the natural objection of the people of Canada to a monopoly."

In commenting on the progress of the Independent companies in the United States, the committee reports that "everywhere the entrance of such companies into the field has resulted in the furnishing of satisfactory service at much lower rates than had previously obtained and in the immense extension of the use of the telephone. A noticeable feature of the telephone development in the United States was the large number of long distance lines and lines giving inter-communication in rural districts."

It goes on to show that the general result of competition in the United States has been an immense extension of the telephone in all directions, and especially to the farmer, and a great reduction in rates; that in many cases both telephones could be rented for the price formerly paid for one, and that in places where the charge for both telephones is higher than for one, it was inconsiderable and more than compensated for by the increased and improved service. Regarding the relative desirability of the single or dual systems, Attorney General Campbell says: "I agree that it is undesirable to have two companies if possible to obviate such conditions, but if we cannot get competition we cannot get a reduction of price, and if we can only get the benefit of competition for the people by entering into the operation of telephones, both as a province and as municipalities, I think we would be justified in so doing."

Among the evidence considered by the committee were communications from business men regarding the actual working of telephone competition. The following is a summary of 1,400 answer from 189 exchanges in the United States to five questions addressed by an American banker to leading business men at such places. This evidence is valuable, coming, as it does, from our fellow citizens who are users of the telephone:

Question 1. Has competition resulted in better telephone service in your city? (a) As given by the Independent telephone company?

Answers—Affirmative, 1,245; negative, 26.

(b) By an improved service on the part of the Bell Company? Answers—Affirmative, 982; negative, 154.

Question 2. Has competition increased the number of telephone subscribers? Answers—Affirmative, 1,251; negative, 8.

Question 3. Has competition brought about greater civility and more courteous attention to the wants of the subscribers? Answers—Affirmative, 1,222; negative, 37.

Question 4. Have rates for telephone service been reduced by the advent of competition? (a) By the reduction of Bell rates formerly charged? Answers—Affirmative, 979; negative, 120.

(b) By the establishment of rates by the Independent company lower than formerly prevailed? Answers—Affirmative, 1,236; negative, 45.

Question 5. In your judgment, would it be preferable to return to the conditions prevailing before the advent of the Independent company? Answers—No, 1,245; yes, 14.

Of this last fourteen, all but five qualified their answers, favoring a return to a single system only upon condition that they would be given the same service as they were now receiving and at the same price. Many of the other answers were very emphatic in opposing a return to conditions existing before competition.

No community can afford to depend upon a monopoly to supply its telephone service for the following reasons and many more that might be enumerated:

Competition: First—Guarantees fair rates.

Second—Secures at least fair management and courteous treatment from both systems.

Third—Stimulates the best thought of inventive minds in improving the apparatus, and the careful study of operating conditions with a view to greater efficiency.

Another advantage of competition—and I wish to call special attention to this because it is so often overlooked by the champions of a single system—is the almost absolute assurance it offers to the subscribers of both systems against being deprived, by accident, of their telephone service. Even if the 70,000 telephones in your city were controlled by one company, many of your business men would still be compelled to have at least two telephones to take care of their business. In case of exchange trouble, fire, strikes, cable or line trouble in any particular section, you might be completely deprived of the use of your telephones until such trouble had been cleared. With instruments connected to both exchanges, the chances for this are almost entirely obviated. It is very seldom that both of your instruments will be out of order at once. The advantage of this until demonstrated by actual experience, as it has been in many cases, is not generally appreciated.

The Independent telephone interests to-day have a good organization, known as the International Independent Telephone Association of America. The organization formed in Detroit in 1897 for the purpose of defending damage cases brought by the Bell, finished its work by winning the last of the patent cases in 1904. In 1905 the association was reorganized in Chicago under what is known as the "Ohio Plan." This plan starts with an organization in each State, which usually divides it into districts to suit local conditions, each of the districts having a complete organization of its own, subject to the control of the State body. The various companies are represented on the basis of the units they operate, a unit being one telephone or circuit mile of toll line. The district organization selects delegates to the annual meeting of the State association on the basis of one representative for every one thousand units operated by their members. One delegate to the International Convention is allowed for each 10,000 units in the State. Each district selects a delegate to this convention, the remainder necessary to make up the full quota being elected at the State meeting as delegates-at-large. At the district meetings all questions with reference to traffic conditions between the companies, the development of territory, etc., are considered. At the State meetings matters of general importance to the movement in the State are taken up.

The International Association holds its annual convention between May 1st and July 1st. Permanent headquarters are maintained in Cleveland, where a corps of secretaries and a map maker are employed for the purpose of keeping in touch with the development in the various States. Now there are over

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7,000 Independent companies operating in over 12,000 cities and villages.

Our plan of organization is not a new one; it is based upon the Federal plan of government, which has been in use in the counties, Congressional districts and States of the Union for more than a century. I believe it was Benjamin Franklin who first proposed a plan of this kind in 1754. It was known as the Albany plan, and outlined the formation of a separate government in each of the colonies, to be brought together in a central government for all of the united colonies. The plan under which our association is operating seems broad enough to cover every possible contingency in keeping the Independent interests working together in harmony and as a complete system.

It is often extremely difficult for those not directly interested in the Independent telephone business to understand the enthusiasm of the people who are engaged in it. It is more than a mere means for livelihood to them; it is a *cause*, something worth fighting for.

Features of Cable Engineering

By O. R. Barnes.

SUBSCRIBERS' feeder cables should be multipled symmetrically to keep them at the highest possible degree of working efficiency. It is possible to lay out a cable so as to obtain an efficiency of 100 per cent by splitting the counts and multipleing the pairs at the extremes of each unit as many times as those in the centre of the unit, but this practice of splitting counts makes it considerably harder to remultiple a cable when relief is needed, and therefore should not be resorted to except in case of absolute necessity. Nearly every telephone man who has spliced paper cables, or come in close contact with those who have done this work, knows that it is better and preserves the life of a cable, to handle the paper covered wires in specific bunches than it is to ramble through a whole splice of 200 wires in order to pick out the odd pairs that go to make up a split count; it is the constant handling and piecing out of the wires in a splice that eventually ruins the cable and causes unnecessary cable troubles. Seldom do we run across trouble in the middle of a section.

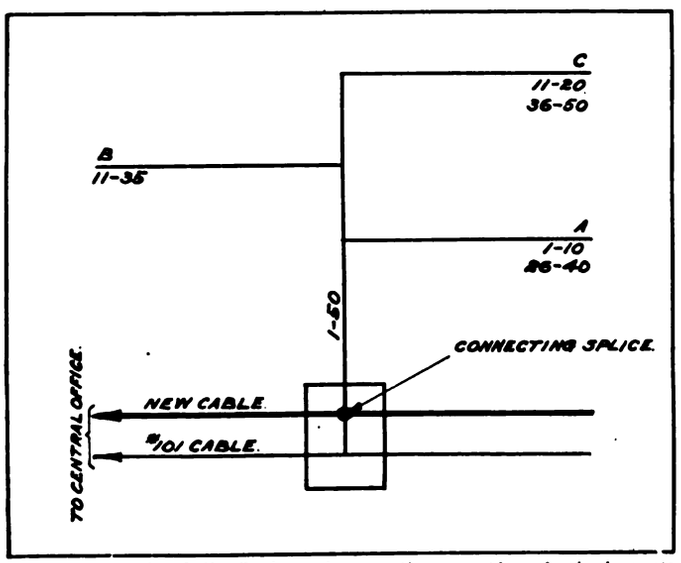

Fig. 1. Example of distribution using vexatious grouping of mixed counts.

In a growing plant, where party lines are used, 80 per cent efficiency is about the maximum that can be obtained without running grave chances of upsetting the symmetrical proportion of the cables. When 60 per cent working efficiency has been reached in a plant of this character relief should be planned and pushed forward before the 80 per cent mark is reached in order to insure proper relief at the proper time. When the cables are working on a 60 per cent basis there should not be any reason for split counts, and if the cables contain them it is safe to say that the engineering is bad, and that the engineer is not keeping the plant up to standard. When split counts are rung in so early in the game, the cables are bound to lose the flexibility which is the paramount item in keeping them in satisfactory working condition. An instance of the mischief which is created by split or mixed counts can easily be understood by referring to Fig. 1. Here we have a 50 pair lateral cable off of which is taken three 25 pair subsidiary cables, A, B and C. Now the lateral cables takes pairs 1 to 50 of the main cable, shown as No. 101, and sub. A takes pairs 1 to 10 and 26 to 40; sub. B takes pairs 11 to 35; sub. C takes pairs 11 to 20 and 36 to 50. The main cable, No. 101, becomes overloaded. It is working on something in the neighborhood of 100 per cent efficiency, and we must pull in a new feeder cable from the C. O. to relieve it. Onto this new feeder cable we decide to throw the 50 pair lateral cable containing the mixed counts, because it is the only thing to do to provide the required relief. And then right away we begin to chop up a new cable with mixed counts, unless we go to the laborious task of resplicing subs. A, B and C separately, so that they can be thrown straight with the lateral cable. It is simple to see that the pairs terminating at A, B and C were arranged only to satisfy the conditions pertaining to cable No. 101, and that the chances of the same combination satisfying the conditions of the new cable are remote and improbable—hence the mischief.

A comparison of the methods of multipleing cables of to-day and those of a few years ago will show that the modern trend is towards simplification and uniformity. The engineer who was known for his ability to work up fancy complications is no longer wanted by the large companies, because complications in cable work are too costly to straighten out. The day of standardization is at hand, and a man to be of any real utility must understand standard methods and work them out simply and accurately.

In the large companies the standard cable is 50 pairs, and feeder cables are usually multipled in units of 50 pairs; that is, a 300 pair cable would contain six units and the theoretical count would be 1 to 50, 51 to 100—25 to 300. Lateral cables of 100 pairs or less are not as a rule spliced direct to the main feeder cable, but to a stub cable, which contains one or two units more than the lateral cable. This stub cable is anywhere from four to eight feet in length, and the end is strapped to a convenient location on the wall of the manhole for splicing purposes. Stub cables, if used and arranged in proper sizes, should provide the essential flexibility for the maximum working efficiency and greatly decrease the chances for trouble that comes from constantly handling the wires in the main splice. When a large feeder cable is first spliced up the wires contained in each unit should be bunched and tagged in order that a great deal of trouble and labor may be saved when it becomes necessary to reopen the splice to make changes.

Coming now closer to the question of efficiency, which is really the ratio between the number of wires in use and the total number of wires in a feeder cable, we may employ a solution which has been found to be practical, and one which has always given good results wherever put in use. To preserve the cable plant we should strive to keep the ratio between the total number of pairs and the number of working pairs uniform, or nearly so, throughout the entire territory in which it feeds; or, to be more correct, the percentage should not be allowed to remain extremely high in one locality and at the same time extremely low in another. And for this reason, if for no other, a close system of supervision should be kept on the plant in its entirety. For this purpose cable efficiency diagrams answer all of the questions pertaining to the solution admirably. In Fig. 2 let A equal the total number of pairs; let B equal total number

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of pairs in use; then the present efficiency equals *B-A*. For the proposed efficiency, let *A* equal total number of pairs, let *D* equal number of pairs in use, then the proposed efficiency equals *B-D*. The efficiency diagram before you shows conditions that should not exist and which are made to reveal themselves by a correct

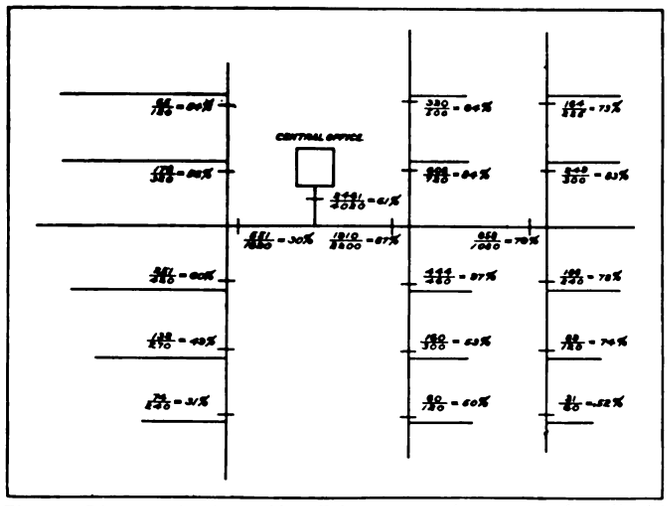

Fig. 2. Diagram showing cable efficiency at various parts of a district.

application of the rule just given. It shows one end of the plant has received considerably more cable than the requirements demand, while the other end is being sadly neglected—too much cable to the left of the central office and not enough to the right. In fact, it shows a very sad state of affairs.

ANNUAL MEETING OF THE NEBRASKA INDEPENDENT TELEPHONE ASSOCIATION.

AT the Lindell Hotel, Lincoln, Neb., on January 22nd, 23rd and 24th, will be held the Annual Convention of the Nebraska Independent Telephone Association. It is expected that there will be a very large number of interesting exhibits of telephone supplies and material, and partially for this reason a third day has been added to the convention period. Members intend to profit by this opportunity to inspect the latest devices which have been brought out by manufacturers. Proceedings which immediately concern all the Independent companies in the state will be brought up, and it is hoped that every company will be represented. The discussion of various features of practical operation, and of the year's advances in different sections is expected to bring out some very interesting information.

INDEPENDENT COMPANIES WIN OUT AT ARGENTA, ILL.

IN the vicinity of Argenta. Ill., good progress is being made by the Independent companies. The Argenta Telephone Company has combined with several other neighboring organizations to issue a directory which shows the rapid advances which have been made by Independents in that vicinity. All Independent subscribers in the county are now listed in a single book.

Although up to a short time ago the Bell company practically refused service to farmers, it is now making tremendous efforts to regain the business which was swept away from it as a result of this policy. The plan which is now being worked in this vicinity is to ship complete exchange equipment to every small town where the situation is controlled by an Independent telephone company. The Bell company hopes by the threat of installing a large amount of equipment, and giving extensive free service, to scare the Independents into entering into some sort of an agreement which will ultimately restore its monopoly. In this particular locality the farmers have all signed an agreement not to accept the Bell service as long as the local Independent company gives good service, although the Bell company is said to have made a proposition to install telephones on farmers lines free of charge for a year.

EXTRAORDINARY PROFITS OF BELL COMPANY AND JUGGLING OF FIGURES TO CONCEAL THEM ALLEGED IN REPORT OF CHICAGO'S CITY AUDITOR.

IN presenting a report on his investigations of the books of the Chicago Telephone Company, City Auditor Louis E. Gosselin, of Chicago, is said to have given his opinion that the company's actual profit for the year 1905 was $2,626,695.67. According to the books of the company, its net earnings for the year are $1,626,811.

It is said that City Auditor Gosselin explains the difference between these figures and those given out by the company by a statement that the books show thirty-five items charged to expense which he believes do not properly belong there. These amount to $269,884.66. The company also set aside a reserve for insurance amounting to $150,000, and another reserve of $275,000 for litigation. The amount paid in royalties to the Bell company for instruments is given out at $305,000. The experts of the city government are reported to have declared that, for the purpose of hiding actual profits, the company placed among expenses no less a sum than $999,884.66, which does not belong there. This would produce the difference between the 9.5 per cent. the company figures for the rate of profit on the invested capital and the 16.6 per cent. which the city's experts have given out as the true profit.

BOOK REVIEW.

BUSINESS TELEGRAPH CODE. Compiled by Burcham Harding, contains 304 pages. Published by The Business Code Company, Chicago, Ill. Price $7.50.

This telegraph code is said to comprise ten times the number of phrases and numerals given in the bulky volumes of the several standard code books, and all this information has been brought within the compass of a book of pocket size. The system is based upon the use of root and terminal code words, the former of five letters, and the latter of four letters. All code words thus consist of nine letters, arranged to form pronounceable syllables. This plan not only has made it possible to reduce the volume to a convenient size, but conduces to flexibility. The list of phrases embraces the entire field of commercial telegraphing for buying, selling, prices, orders, quotations, contracts, shipping, delivery, financial matters, etc. All code words are so constructed as to minimize the probability of mistakes of telegraphers, and the book also provides two tables by means of which words mutilated in transmission can be traced.

It would seem that this book should have a very wide field of usefulness in supplying a means of reducing the cost of messages between telephone operating men and manufacturers, and between the home offices of manufacturing companies and their sales representatives.

NEW TERRITORY OPENED UP BY INDEPENDENT COMPANY IN NEW YORK.

AT Warren, N. Y., the Kinzua-Corydon Telephone Company, the plant of which has been under construction for some time, recently opened its exchange. The completion of this plant, and the opening of its lines to business enables people in a considerable territory to use Independent telephones. Among the places which have received this advantage may be mentioned the townships of Elk and Corydon, in Warren County, the townships of Corydon in McKean County, and Elk and South Valley in Cattaraugus County, all of which places will be put in direct communication with Warren, and a large amount of adjacent territory. The new company will connect with the Union Telephone Company, and thus all parts of Warren County may be reached. The policy of these affiliated organizations is to thoroughly develop the territory, thus giving a complete service, where previously the only means of obtaining telephone communication with a person has frequently been to send for him from a Bell pay station. It is expected that the new companies will soon be giving good service not only to villages, but also on a large number of rural lines.

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PAT ROONEY ON TROUBLE.

PAT ROONEY, a Cleveland lineman, is much averse to admitting ignorance of any branch of telephone work.

He started as a full-fledged lineman "on a bluff," to use his own expression.

"Sure," he afterwards remarked, "phwats the sinse of a lad startin' as a groundsman fur $1.75 a day whin by only gettin' a pair of spurs and lookin' rale tough he kin be after gettin' $2.85? Niver mind about the climbin' business; ye can larn that as ye go along. To use wan of the Cleveland Telephone Company's mottos, 'There's a difference.' Look at me brother Dinny in New York. There was the gossoon for ye. I'll be blissed if he didn't start out as a Frinch instructor fur some big bug family. Begorry, he didn't know as much Frinch as a dago, but that didn't worry Dinny. Well, I tell ye phwat he done. The day before he was to start instructing the kids, he goes to the Y. M. C. A. and takes his furst lissin in Frinch. The next day he tached phwat he'd learned to the kids, and no wan was iver the wiser. The last I heard of him he were studying Frinch astronomy, be jaggers."

It is related of Pat that one of the first questions asked of him by the foreman was whether he could guy a pole.

"Begorry," Pat replied, "I've often guyed a Dootchman, but niver worked wid anny of thim Poles."

One morning recently, after a heavy rainstorm, several linemen were pressed into service to assist in clearing trouble. Pat Rooney was one of the number, and it was his first experience as a troubleman.

The wire chief delegated Pat on a case of a swinging ground, which trouble Pat found readily enough, and, walking proudly into the office where the telephone was located, he opened the bell box, looked over the apparatus very knowingly and blew into the transmitter as 'experts' are wont to do. "Yer tellifone's all right now, sur," he remarked to the subscriber, who had been watching his every move.

"What was wrong?" asked the subscriber.

"High insulation resistance," responded Pat promptly.

"I don't know what that is," said the subscriber, suspiciously.

"Sartinly ye don't," said Pat with a look of superiority, "but if ye were a tellifone linesman ye'd understand it. Good day to ye, sur."

"Just wait a minute," shouted the subscriber, who had taken down the telephone receiver. "What is this scraping noise on the line? Here, listen for yourself."

Pat took the receiver, listened very intently for a few moments and, handing it back, replied:

"Don't bother yer head about that nise, me good man. It's only sparrows picking on the wire."

"But it is much louder at times than it is now," persisted the subscriber.

"Will, them's pigeons," argued Pat, without batting an eyelid. "Sure, sur, ye ought to be thankful ye ain't out Wist, where the eagles——"

But the subscriber had fled into the next office.

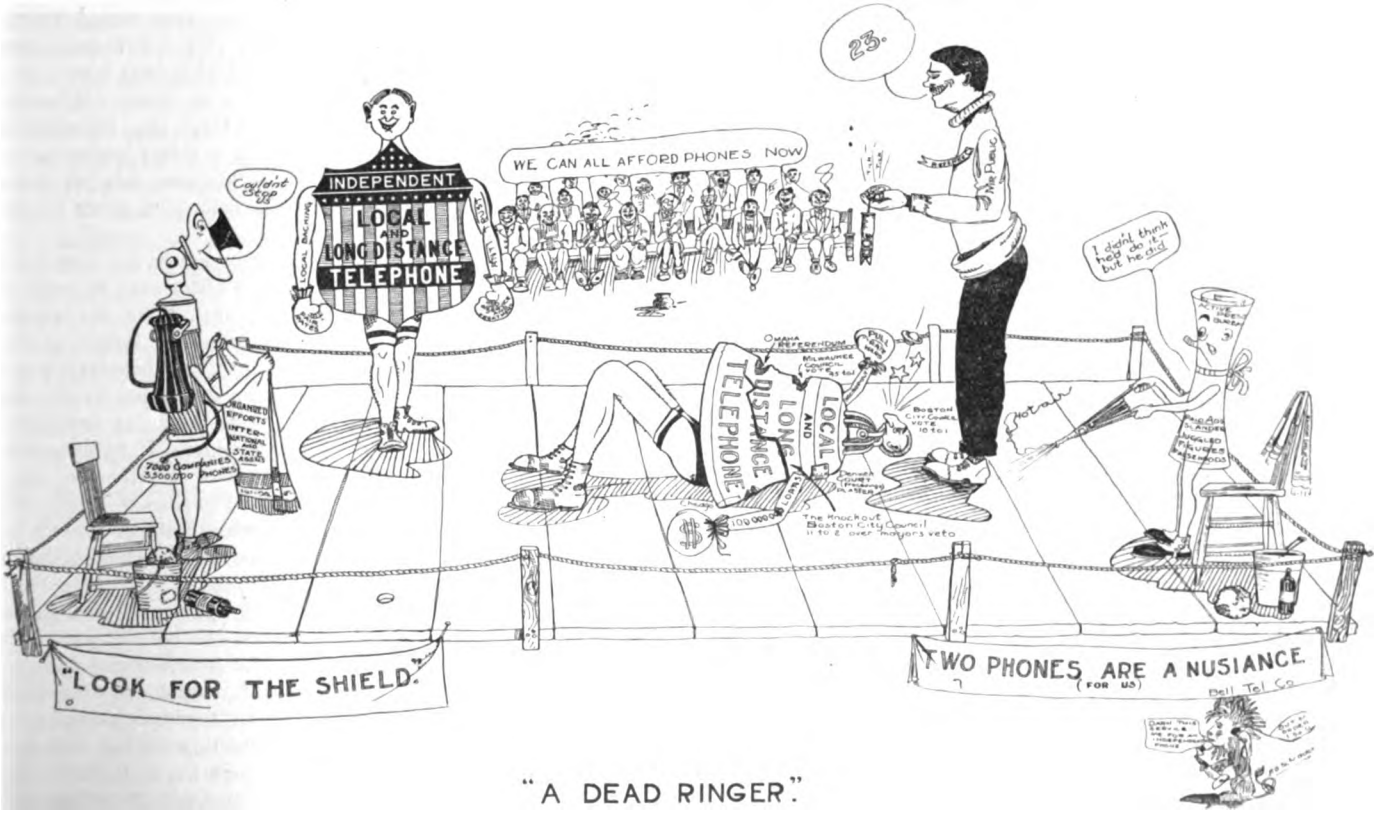
GOOD INDEPENDENT DEVELOPMENT AT STREATOR, ILL.

STREATOR, ILL., with a population of about 17,000, has an Independent telephone company with 1,460 city subscribers, giving a development of one telephone for every eleven persons. This company, which goes under the name of the Streator Independent Telephone & Telegraph Company, has also 540 rural line subscribers. It began operations July 1st, 1901, with only 287 subscribers, and its growth is attributed to the efficient service it has given from the first on farmers' lines.

At the present time nearly every farmer within a radius of ten miles of the city has a telephone, and is in direct communication with the city exchange. The company also has agreements which give it exclusive connection with farmers' line companies having an aggregate of about one thousand subscribers in the neighboring localities of Cornell, Ransom, Long Point, Leonore and Grand Ridge.

COMMITTEE OF- PROMINENT ENGINEERS TO INVESTIGATE CONDITIONS IN CHICAGO.

W. H. CRUMB, telephone contractor, of Chicago; G. W. Wilder, consulting telephone engineer, and Prof. D. C. Jackson, head of the electrical department, University of Wisconsin, have been selected as the members of a commission to investigate the Chicago telephone situation. They will report to the city on engineering matters, supplementing the recent report of the city auditor.



"A DEAD RINGER."

Cartoon Suggested by Recent Declarations of Some Important Cities in Favor of Telephone Competition. Reproduced by the Courtesy of Mr. J. A. Harney, Assistant Secretary of the International Independent Telephone Association.

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THE EDITOR'S PAGE

MEMORIZATION OF NAMES BY OPERATORS.

ONE of the largest Bell companies recently issued a general order from which we quote as follows: "Where a portion of the subscribers in an exchange pay for county service and the remainder for local exchange service only, the local manager must place before the operators on the switchboard a list of those who have county service, and the operators must see to it that the non-subscribers as well as subscribers who are not paying for county service are not permitted to use the telephones of subscribers who are paying for county service."

How much simpler it would be to use a conventional designation for such lines. Line lamp caps with special markings are easily obtainable, and it is only the work of a moment with a little paint to put a special designation mark on a drop.

It is to be hoped that all Independent companies are alive to the advantages of this scheme. It gives the operators one mark to remember, in place of a list of names, subject to change at any time. Reduction of the amount of mental effort demanded of operators in this manner simplifies their work and enables them to handle calls more efficiently. The scheme can be applied to a great variety of special uses without becoming too complicated to be valuable.

KEEPING STEP WITH THE BUILDERS.

LOOKED forward to by telephone companies as a real and probable condition which will be reached at no very distant time is that state of development represented by a telephone in every family. More and more is telephone service coming to be looked upon by the public at large as a utility as necessary, or even as indispensable, as have become the water service, or the artificial lighting service in towns. As people come to appreciate the value of their own time, and the folly of spending it in the running of trivial errands, they grow more appreciative of the fact that the installation of a telephone, instead of being a drain upon the family resources, is a proper measure of economy. Evidences of this attitude are plainly given by the remarkable figures for the growth of telephone systems during the past year, and become still more notable when an attempt is made to separate the telephone subscribers into classes. It appears that the service has recently been extended among users estimated to have what are commonly called moderate incomes so rapidly as to altogether pass the proportions which might be expected from the reduction of rates to figures lower than those which were common a few years ago.

This continued increase not merely in the size of the systems, but in the rapidity with which they are to be extended is in many quarters expected to continue for some time to come with some considerable confidence. Where this confidence is based upon firm and reasonable grounds it has a distinct business value, and can in fact he turned to account in the effecting of economies in construction. It is well known that the cost of building many exchanges, and of many underground conduit systems has been considerably larger, owing to the necessity of making enlargements frequently, than would have been the outlay if a surer appreciation of the possibilities of development had been realized. This being demonstrated for certain portions of the equipment of a telephone system, there yet remains an opportunity to consider the bearing of an approximately assured rate of progress upon substation equipment, and more particularly upon substation wiring. In large office buildings erected in cities the builders would no more think of leaving out provision for telephone wires than they would of omitting the lighting circuits. It is quite possible that someone will work out a plan for wiring residences at the time of their erection which will lead to economies which may in a measure be compared to those effected in the larger buildings.

There are several things which would tend to make the wiring of a building while other construction is in progress a measure of economy. In the better classes of residences concealed wiring is now almost the only acceptable form. The boring of holes and other slow and laborious work necessary to carry a pair of wires through a series of partitions is a costly method of carrying conductors to the necessary terminal point. Although it may be objected that the proper location of outlets at a time considerably in advance of the occupation of a house would be difficult, a considerable amount of multipleing could be done without bringing the cost up to that of a single good job of concealed work. Then, if the work is well done at the start the wires are likely to be well protected, and there will be little likelihood of trouble on this portion of the line.

There are numerous disadvantages in the plan which are just as evident as some of its desirable features. It all comes down in the end to a balancing of costs. With a proper classification of residences, and a practical plan of wiring, it would seem likely that in many places the installation of telephones would proceed at a rate sufficiently near to that of the erection of buildings to make such a scheme show a small profit and in these days even a small profit is sometimes worth taking a chance for.

CONGRATULATING THE NEIGHBORS.

CONVENTIONS are the talk in a number of States just now. And most remarkable of all the talk which is being circulated is that about possibilities. One would think, on hearing of the good things to come, that the Independent telephone movement had just been started, had broken into a new field and was celebrating a victory without a precedent. Whether it be Omaha or Milwaukee or some other large city, its winning is the thing that is worth while mentioning in every gathering of Independent telephone men. It is this enthusiasm, this perennial delight in achievement anywhere in the field, that gives to the movement its best strength.

As soon as entrance is gained into a place which has long held out against the Independent companies the effect may be seen in increased activity throughout an entire State. With the opportunity for the transaction of business with the larger places companies which have long decried toll service begin to wake up, and think that after all there may be something in it. So we see the direct, business interest in these advances extending in circles which are gradually growing wider. It is generally recognized that each new link in the chain of development contributes to the strength of those already in existence. With the extension of connections between one city and another growth in each quarter becomes of constantly increasing importance to those in neighboring places.

A striking feature of these meetings of Independent telephone men is that nearly everyone present seems to be well informed as to progress in the whole country. The Independent manager keeps pretty closely in touch with new developments. He realizes that what is done to strengthen an Independent company in one part of the country improves the standing of the Independents as a whole, and so is a help to him in his own work. So it is that the spirit of co-operation is so strongly in evidence at all gatherings.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

CUTTING WIRES NOT A LEGAL REMEDY.

Under a verbal agreement with the owner of a vacant lot in the outskirts of a town, we extended a wire diagonally over his property, but without planting poles in the soil. He now denies that he made any such verbal agreement and has actually gone so far as to cut our wires. Can we compel him to let us put our wires up again, and if not, what can we do to him for making us so much trouble and expense? N. S.

EVEN if he had never given you permission to stretch your wire over his property he would have no right to cut it in the summary manner he did because a telephone wire stretched over the property of another without authority, causing no obstruction, is not a nuisance which may be summarily abated. His proper remedy if he had not given you permission to cross his land would have been an action of ejectment. But having given you verbal permission to over-build his property, you were in lawful occupation of it. He could be either sued in damages for the injury done to your line or prosecuted under a statute prohibiting the willful cutting of telephone wires. You are not in a position to compel him to let you put your wires back because his verbal permit to you was nothing more than a license, which is revocable at the will of the licensor. On these questions see McGowan vs. State (Ala.) 40 S. 142; Butler vs. Frontier Tel. Co., 109 App. Div. 217, 95 N. Y. S. 684.

WISCONSIN METROPOLIS COMPANY TRYING TO FORCE ENTRANCE TO MILWAUKEE.

MAYOR BECKER, the forty-six aldermen, the City Engineer, and the members of the Board of Public Works of Milwaukee, Wis., have been served with a writ of mandamus requiring them to act and approve the plan of the Wisconsin Metropolis Telephone Company for laying conduits and stringing wires for a new telephone system in Milwaukee or show cause on Janury 15, 1907, for their failure to obey the mandate of the Court.

The company filed its petition for the right to lay conduits, erect telephone poles and string wires with the Board of Public Works on June 11, 1906. No franchise was sought by the company. A permit alone was asked for. No action was taken on the petition by the city, excepting the referring of the petition to the council by the Board of Public Works.

It is claimed by the company that no franchise is necessary. The proceedings instituted will be in the nature of a test to see whether the company is right in its contention that the city has the authority only to determine in what manner a telephone company shall install, maintain and operate its system in the public streets and alleys.

IN PROSECUTION FOR MALICIOUS CUTTING OF WIRES THERE MUST BE A CRIMINAL INTENT.

ON the 18th of November, 1905, a query was answered on this page under the heading of "Trimming of Trees in Ohio." A telephone company had a franchise from the village council to erect its poles, etc., in the streets of the village under the supervision of the street committee of the village council. The owner of a lot fronting on the street on which the company's poles stood brought suit for damages for trimming the shade trees on his lot between the curb and the sidewalk. The poles were forty-five feet high and located as directed by the street committee of the village council, which specified the length of poles and said the company would have to do some trimming on the trees in question. The property owner also caused the arrest of each supervisor of construction and also the general manager of the company on a criminal charge of willful and malicious destruction of property. The criminal case was tried in the Common Pleas Court at Delta, O., and a fine of twenty-five dollars imposed upon each defendant. The case was appealed by the defendants to the Circuit Court and reversed upon the following points: First, that the verdict was against the weight of evidence; second, that the Court erred in its charge to the jury, and third, that there was no evidence of any intention to commit a crime. The Circuit Court remanded the case to the Common Pleas Court for retrial, but the prosecuting attorney states that he will never retry it. The civil cases have not yet been tried, but we are informed they will be contested to the last ditch, as there seems to be no question of the company's right to take the course it did.

TELEPHONE IS NOT A BET REGISTERER.

"WITHOUT doing violence to the ordinary meaning of the words, a telephone wire, with the receiver and transmitter, cannot be said to be an instrument or device for the purpose of recording or registering bets." So said Judge Gantt in an opinion recently handed down in the Supreme Court of Missouri, which exempts Charles Oldham from the payment of a fine of $500 imposed by the criminal court in Jackson county and discharges him from the custody and punishment of that court. Oldham was convicted of violating the law in relation to registering and recording bets on horse races. The act of 1905 prohibits the use of any instrument or device in any building or enclosure in the State for the purpose of recording bets, either within or without the State. Oldham was the man who figured in the racing at the Elm Ridge track in Kansas City, Mo. He had a telephone attached to his person and transmitted thereby to another person in Kansas City, Kan., transactions at the track and the results of wagers. He was convicted under the provisions of the act passed by the recent session of the general assembly repealing the breeders' law, under which all the race courses in the State had been conducted. The judgment of conviction is reversed upon two grounds: First, that the indictment was not drawn by the prosecuting attorney in accordance with the language of the statute; second, that the blackboard, telephone instrument and numbered tickets of admission were not "instruments and devices within the meaning of the statute for the purpose of registering bets." The court further said: "It may be said that the construction of the telephone line and the arrangement for having the bets registered and recorded in Kansas City, Kan., was a perfectly obvious trick and subterfuge for evading the law and we agree with the counsel for the State that such was the obvious purpose and that the disguise was too thin, but after all the question is not whether the defendant has successfully evaded the statute, but whether he has violated it."

In an interview with Governor Folk, the latter has announced that if any amendment is needed to make the act of 1905 effective he will recommend it to the Legislature next month. The Governor also announced that race track gambling in Missouri was dead and that the bookmakers might as well realize that it cannot be resurrected by telephone or any other device that the statutes can be made to cover.

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IN THE OPERATING FIELD

PROFITABLE DIRECTORY ADVERTISING IN BALTIMORE.

FROM time to time we have taken occasion to allude to the large amount of advertising carried by the Maryland Telephone & Telegraph Company, of Baltimore, in its directory. Persons interested in the subject will doubtless appreciate the value of this by-product of the Maryland company's business more fully, however, if they have accurate figures. Through the courtesy of Mr. Thomas White, traffic manager of the company, we are able to say that the receipts for this advertising amount to about $7,000 per annum. This amount practically pays for the directory. The company states that its patrons have been very much pleased with the results obtained from this form of advertising. One of the special plans which has been productive of much business has been the use of small posters advertising various comodities, which have been from time to time placed on the back of the cover.

EXTENSION OF INDEPENDENT TOLL SERVICE FOR MICHIGAN.

TELEPHONE men representing the Independent companies of Michigan were in Grand Rapids recently to talk over the extensions which will be necessary to give adequate toll service between Grand Rapids and Detroit, as well as to other large cities outside of the State. The visitors were all members of the State Traffic Committee of the Independent Clearing House Association, and this was the regular quarterly meeting of the committee. There were present W. B. Woodbury, general manager of the Home Telephone Company of Detroit; H. A. Price, general manager of the Saginaw Valley Company; F. M. Howard, assistant general manager of the Valley Company at Flint; C. L. Norton, special agent of the United States Telephone Company of Cleveland, Ohio; W. J. Melchers, general manager of the Union Telephone Company of Alma, and General Manager Tarte of the Citizens' Company.

MEETING OF IOWA TELEPHONE MEN AT WATERLOO.

MEMBERS of the Black Hawk Local Telephone Association met recently at Waterloo, Iowa. The present meeting was the first annual gathering of the members of this association since it was organized. Reports showed a very satisfactory growth of all the companies represented. A discussion of the interchange of business between telephone companies occupied an important place in the meeting. The members appointed as a committee to confer with the managers of free exchange companies the following gentlemen: J. E. Conry, M. C. Young and G. E. Evenson. They will endeavor to induce managers of companies of this class to join the association, and perfect arrangements for a fair division of costs and income on inter-connecting lines.

In addition to the matter of the exchange of service many other subjects intimately connected with telephone operation were discussed. Addresses were made by E. W. Haradon, G. A. Evenson, William Crownover and others. Among those present at the meeting were:

E. Hermence, president, and B. W. Farrand, manager, of Sumner Telephone Co.; C. W. Ayers, manager Waverly Telephone Co.; W. J. Stanton, superintendent Corn Belt Telephone Co.; J. F. Van Voss, manager Dubuque Telephone Co.; G. A. Evans, secretary Farmers' Mutual Telephone Co., of Finchford, and secretary of Black Hawk Local Association; F. R. Decker, manager Farmers' Mutual Telephone Co., of Janesville and vice president of Black Hawk Local Association; F. W. Jacob, director Farmers' Mutual Telephone Co., of Janesville; E. W. Haradon, president Farmers' Mutual Telephone Co., of Jesup, and president of Black Hawk County Local; A. F. Whittle, district manager Corn Belt Telephone Co., of Waterloo; M. C. Young, manager Farmers' Mutual Telephone Co. of Jesup; M. S. Allen, predient La Porte Telephone Co.; George Meyers, secretary, and William Oltrogge, vice president, Washington Mutual Telephone Co., of Waverly; H. C. Steege, Waverly; T. R. McElhinney of the Traer Farmers' Mutual Telephone Co.; J. L. Paine, director Interstate Telephone Co., of Fayette; H. B. Shoemaker, secretary and treasurer United Exchange Co., Reinbeck.

A REMARKABLE FARMERS' LINE.

POINTING out the wonderful burden that can be imposed upon a farmers' line, the following letter received from a correspondent speaks for itself:

G. W. Kotts,
ELECTRICIAN,
WITH
N. Dak. Independent Tel. Co.,
Hope, North Dakota.

Hope, N. Dak., Dec. 31, 1906.

The American Telephone Journal, New York, N. Y.

Gentlemen:—

"In your queries of Dec. 22-06 you have someone that asked the question of phantom his lines with incandescent lamps, and you answer him that it cant be done. Now I wish to say that I have phantomed a metallic line with lamps some two years ago. (farm lines at that) and havent had any more trouble on them then with an ordinary line I ring 19 phones through my phantom and have 14 Phones on the metallic line all working O. K. I havent made three circuits out of two metallic lines but make two out of one metallic line that is one is a ground line. you see we run out some 8 or 10 miles a metallic line and then Phantom a ground line over this metallic line in some cases 10 to 15 miles further with all the Phones on that we can find rings for. we have to build here in N. Dak. a great manny more miles to the number of farmers per mile then in the east so our farmer lines are quite long. This Phantom of mine gives no trouble from lightning as the lamp cant burn out very easy. I just called attention to this as I thought that as long as I had made a success of it it wouldent do any harm."

Yours respt., G. W. Kotts.

Telephone men unfamiliar with conditions where lines are expected to carry a good heavy load will undoubtedly be somewhat surprised at the quality of the engineering skill to which this letter bears testimony.

AN EXAMPLE OF BELL RURAL SERVICE.

IN the issue of a newspaper published in Springfield, Mass., dated Dec. 30th, 1906, there was published a six column article intended to show the people of Western Massachusetts that the local Bell company is rapidly developing its small exchange and rural line business in this district. In the article appears the following:

"On these country lines it is quite amusing to notice how far a message sometimes must travel in order to cover a short distance. For instance, there is such a case in Blandford. The Otis line runs over into Blandford and ends at a house in that town. The next house has an instrument connected with a line from Blandford Center. The two houses are scarcely a stone's throw apart, and yet if the occupants of the former house wish to telephone to those of the latter, here is the course the message must pursue: Over the hills to Otis, down to Lee, then to Pittsfield, thence to Westfield, up the hill to Blandford Center and out to the other house; in all a distance by wire of upward of 80 miles, with toll rates accordingly. Much cheaper, a lot easier and certainly quicker, to simply shout from one house to the other."

The write-up which contains this joke is prepared from material which was very evidently furnished by the Bell company. Prob-

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ably the jest is not appreciated by the persons who have to pay tolls on eighty miles of wire to cover a few yards, but it does give an amazing insight into the reasons behind the old argument "Don't support an Independent company, which has only short lines. Help the company that can give you long distance connections."

CONDITIONS GOVERNING SPECIAL ARTICLE COMPETITION.

AS first announced in the issue of December 29th, 1906, THE AMERICAN TELEPHONE JOURNAL offers a group of prizes for the best three articles which will show the true extent of the loss in a case of damage to a telephone company's equipment from a sleet or snow storm, and a method of building by which such loss could have been prevented.

These articles must describe the effects of an actual accident, resulting from the loading of wire, cables or fixtures with sleet or snow during the present winter.

Each article must be accompanied by one or more photographs of the sleet-covered equipment, taken immediately after its fall. Articles must describe fully the nature of the load on supports, telling why they failed; the form of construction which the author believes would probably have been most effective in preventing the loss, with reasons for his belief, must be described. Particulars as to the effect on service, such as number of lines out, length of time interrupted, number of complaints, any advantages gained by competitors not subject to such interruption at the same time, and losses due to rebates to subscribers whose lines were put out of service, should, if possible, be included, in order to give sufficient information to enable readers to form an approximate idea of the actual cost of damage, from the broadest point of view. The actual cost of material and labor for making repairs would of course be desirable.

Articles must not exceed 2,000 words in length. Awards of $20, $15 and $10 will be made for the first, second and third prizes, respectively. Payment for any other articles received will be made at regular rates if accepted for publication, so that the time expended by any contributor of good material will bring him due compensation. THE AMERICAN TELEPHONE JOURNAL reserves the right to refrain from considering the author of any article as a candidate for a prize if the material submitted cannot be developed into a form acceptable for publication. Each article must deal with a single case of line failure. Any person may contribute as many separate articles as he wishes, provided they deal with separate subjects. Awards will be made as soon as possible after April 1st. Judgment will be based on the merits of photographs and articles from a strictly practical standpoint, on the value of the facts they present, and not on the mere wording of the articles. No discrimination against an article on account of lack of literary style will be made. All competitors will be on an equal footing, whether they may be subscribers to this journal or not.

WISCONSIN INDEPENDENT TELEPHONE MEN TO MEET AT MADISON.

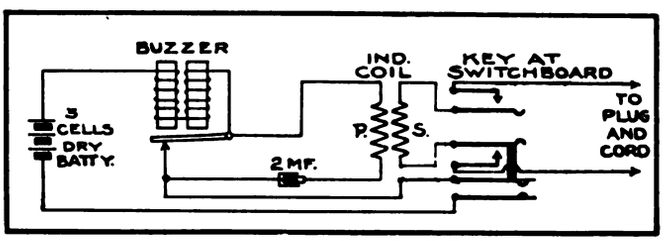
TWO days, January 16th and 17th, will be spent at Madison, Wis., by delegates from the Independent telephone companies of the state, who will then meet for their annual convention. The sessions will be held in Turner Hall. As the telephone sessions at the Chicago Electrical Show come on the first days of the same week it is expected that many members of the Wisconsin Association will make a single trip which will cover the two cities.

Wisconsin by the granting in Milwaukee of the franchise to the Milwaukee Independent Telephone Company, on November 12th, and the subsequent incorporation of the Independent Long Distance Company, has assumed a new and exceptionally prominent place among the states in which Independent companies are rapidly advancing. H. D. Critchfield, of Milwaukee, who is president of the two new telephone companies, will be at the meeting prepared to take long distance contracts from independent companies in all parts of Wisconsin. Other prominent Independent telephone men, many of them from outside states are expected to be present, and will explain developments in various portions of the field. Manufacturers will have interesting exhibits, and a large attendance of operating men is expected. This meeting promises to be the most important ever held in Wisconsin, and will no doubt lead to some exceedingly interesting developments.

A HOWLER CIRCUIT.

By F. C. GREENWALD.

A FREQUENT cause of trouble is the failure of the subscriber to restore the receiver when through using the telephone. Sometimes the receiver may be accidentally removed from the hook without the subscriber's being aware of the fact. In small exchanges not equipped with some special instrument it is customary to notify the subscriber to hang up by ringing on the line. Ringing is unsatisfactory, as it fails to produce sufficient volume of tone to be heard for any considerable



Simple Howler Circuit for a Small Exchange.

distance, but also causes bells of other subscribers on the line to tinkle.

A cheap and efficient form of howler can be readily constructed by the man about the exchange, and it will tend to a considerable degree not only to remedy this trouble when it occurs, but also go far toward preventing this common occurrence. The method consists of throwing the tone produced by the make and break of the contacts of a vibrating buzzer upon the line by means of a suitable key on the testing table or specially provided at the switchboard, as indicated in the sketch.

Two or three good dry cells connected with a well-made buzzer adjusted to a high speed will send an alternating current of high frequency through the line, telephone and condenser so as to produce a loud, shrill noise in the receiver at the sub-station in trouble and not affect the bells at any sub-station on the line. Although the buzzer circuit may be connected directly to the line, it is preferable to insert an ordinary magneto induction coil, which acts as a transformer. This also insures a constant resistance in the buzzer circuit.

TARIFF AND ROUTE BOOK ISSUED BY TEXAS INDEPENDENT TELEPHONE COMPANIES.

A TARIFF and route book has been issued by the following Independent companies operating in the state of Texas: South Texas Telephone Company, Austin, Texas; Texas Telephone Company, Waco, Texas; Brazos Valley Telephone Company, Waco, Texas; Hillsboro Telephone Company, Hillsboro, Texas; Ellis County Telephone Company, Waxahachie, Texas; Ft. Worth Telephone Company, Ft. Worth, Texas; North Texas Telephone Company, Ft. Worth, Texas; Texas Consolidated Long Distance Company, Dallas, Texas; New Long Distance Telephone Company, Sherman, Texas.

The book is issued for the use of exchange managers, agents and long distance operators, and contains a complete list of stations which may be reached over the lines of the companies who publish it. To keep it up to date, it will be followed by a supplement every six months. Instructions are given for routeing, handling tickets, etc., and an operator's code is given. Following this information are pages with names of towns and the square number, blank spaces, etc., for filling in routeing instructions. This book, which was forwarded to us through the courtesy of J. B. Earle, general manager of the first three companies named in the list, seems incidentally to give convincing evidence of the extent and value of the Independent long distance service which is being gradually built up in our largest state.

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QUERIES

LOADING COIL CASE.—(811.)

In a recent AMERICAN TELEPHONE JOURNAL issue I noticed a reference to a patent on a loading coil case. Can you tell me what this is used for, and where it is located in practice? L. R.

The loading coil case referred to is used to contain and protect the "loading coils" installed in connection with long distance trunk cables. These coils are installed at intervals determined by mathematical investigations, based upon the electrical constants of the cable with which they are used, their function being to overcome, in a measure, the harmful effects of capacity, neutralizing them by the opposite effects of their inductance. The cases are usually set in manholes at the proper locations along the route, and wires from the cables are led into them through the opening at the top, to make connection with the individual coils.

DANGER FROM HIGH POTENTIAL CIRCUIT.—(812.)

Will you please give me the following information? The street car company is going to string a 25,000-volt circuit into this city on 40-foot poles, and I would like to know the safe distance from this line for a lineman to work on a common battery line of the telephone company. Please state the distance in wet and dry weather. Please answer as soon as possible, as I want to do some work on the telephone line and, having had no experience in these circumstances, do not want to get killed. H. R.

A 25,000-volt circuit and a hive of bees are alike in one respect —and that is that it is best to keep as far away as possible from both unless thoroughly acquainted with the characteristics peculiar to each.

However, a man might safely work on a dry day on a common battery line within a foot or eighteen inches of the high potential circuit, and as close as three or four feet on a wet day, supposing the line he is working on to be grounded also the high potential circuit.

The great danger lies not so much in the nearness of the telephone lines to the heavy lead as to the liability of accidentally handling a wire that has in some manner become crossed with the heavy current.

The writer had in his employ at one time a lineman who had accidentally become too well acquainted with a circuit of high voltage on one trip up a pole from which he immediately descended and headed straightway for a paint store, where he purchased a gallon can of bright red paint and a brush. He then followed the telephone lead the entire distance it paralleled the power lead and on each pole where the power wires were in a position at all dangerous to one working on the pole, he placed a nice broad red stripe on a level with his eyes, where he couldn't miss it next time occasion demanded a climbing of the pole.

PHANTOM CIRCUIT.—(813.)

We wish to use a phantom circuit on two lines running between two towns about 14 miles apart. These lines are trunks between common battery switchboards. Please send a diagram for connecting the phantom circuit; also state resistance of coils to be used. We have a coil with winding as shown in enclosed diagram, Fig. 813a. Could this be used?

Please give some good circuit for magneto toll line which can be used with common battery cords without a repeating coil and also get supervision. We are working two lines now, but find the common battery cord holds up the clearing out drop at the magneto exchange all the time it is in, although it does not throw any noise on the line. A. C. S.

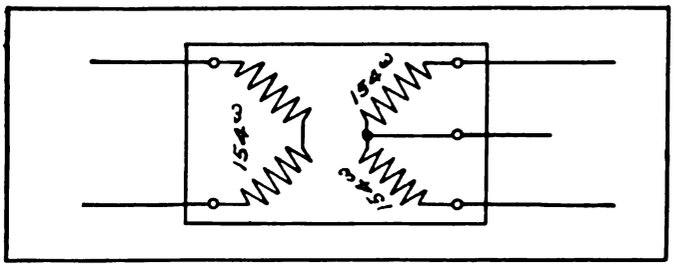

Fig. 813a.

Referring to the diagram Fig. 813*b*, A, B, C and D are repeating coils. They should be made quite long, with four windings of about 100 ohms each. Circuits 1-2 and 3-4 are your regular lines, while 5-6 is your phantom.

Although we do not know what else is on your poles, we do not think you will get any cross talk in this short distance. If you have any trouble of this sort, advise us and we will suggest a plan for transposing. The coil you illustrate would scarcely be applicable, owing to the very low resistance, as shown on one side.

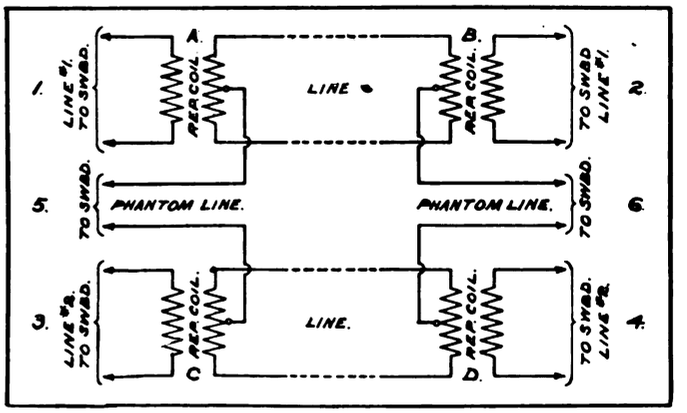

Fig. 813b.

In relation to your second question, which we do not fully understand, we would like to have you explain conditions fully. We shall then be glad to give you an answer to suit your requirements.

UNBALANCING CIRCUIT BY SUPERVISORY RELAY.—(814.)

Balancing telephone circuits is constantly insisted upon, yet in the standard Bell cord circuit a relay is permanently connected in one side only. How is it that this does not bring in troubles? F. N.

The resistance of this relay is very low (about twelve ohms) and it has two windings in parallel, one of which is non-inductive. As a matter of fact, there can be detected a slight difference from the results obtained with a perfectly balanced cord circuit, but for ordinary commercial uses the detrimental effect is so small as to be negligible.

PAINTED SWITCHBOARD LAMPS.—(815.)

Lamps furnished for certain purposes on our switchboard are covered with black paint for a little over two-thirds of their length. Other lamps used on the same board have no such covering. Can you tell me the reason for this difference? B. R.

The lamps you mention as having a black coating of paint are intended for use with a special mounting strip, arranged for twenty lamps per strip. The space available in a switchboard panel is so narrow that this mounting strip is made up without any solid backing, extending well to the rear, as is found in most strips which accommodate only ten lamps. When these strips were put in service it was found that the light from a lamp, when illuminated, was sufficiently bright to shine through the adjacent lamps on either side, and cause them to glow. This often confused the operators, appearing as a false signal. To remedy the defect the lamps furnished for this style of mounting are coated with paint which covers all but the forward portion of the lamp, effectually preventing the illumination of any opal except the one associated with the lamp through which current is passing. Of course this is in the way of being a makeshift to avoid a practical difficulty. As only the lamps used in the special style of mounting referred to are subject to this difficulty, they alone have the painted covering.

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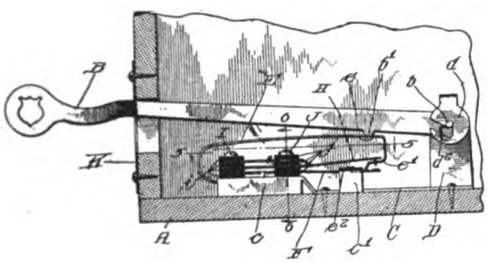
TELEPHONE PATENTS

TELEPHONE HOOK SWITCH.

George G. Foster, Chicago, Ill., patents (No. 839,830; dated January 1st, 1907; filed July 26th, 1904; serial No. 218,301) and assigns to the American Electric Telephone Company, Chicago, Ill., a telephone hook switch.

From the base of the bracket plate *C* extends at right angles



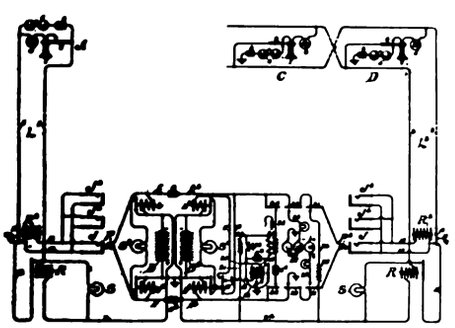
an upright portion *D*, formed at its top with an overhanging downwardly bent portion *d*. The parallel sides of the supporting device thus formed are slotted, as shown at d^2, a similar slot in the opposite side being concealed by the hook *B*, to receive the pivot pin *b* of the hook. This construction permits the switch-hook to be readily disengaged from its bearings and removed.

The upper portion of the spring *E* is provided with a depression *e*, adapted to be engaged by a lug b^1 extending downwardly from the lower side of the hook. The spring *E* has a downwardly bent portion e^1, adapted when the hook is up to engage the lower side of a piece of insulation e^2. This piece of insulation is rigidly secured to the upwardly bent side portion c^1 of the bracket plate. This construction limits the downward motion of the spring *E*. The end e^3 of spring *E* is forked, and between the two limbs passes the end portion of spring *F*, which, when the hook is up, also bears upon the under side of the insulation e^2 The operation of the device will be evident from an examination of the accompanying illustration.

TELEPHONE SYSTEM.

Harry G. Webster, Chicago, Ill., patents (No. 839,910; dated January 1st, 1907; filed December 12th, 1902; serial No. 134,897) and assigns to the Kellogg Switchboard & Supply Company, Chicago, Ill., a telephone system.

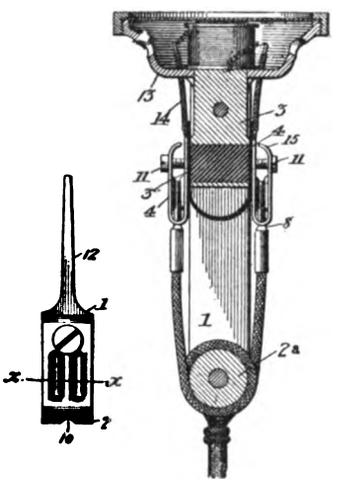
When the receiver is removed from the hook current passes through line relay *R*, which when energized causes the line signal



to appear. The operator then inserts answering plug *P* in the answering jack *J*, with the result that the battery *B* is included in a local circuit with cut-off relay R^2, which may have a resistance of 1500 ohms. This cut-off relay is adjusted to respond to a current over this path even though it be shunted by line conductors. Its operation cuts off ground branch 11, and also opens the local circuit of the line lamp *S*. The line relay is now shunted by supervisory relay *r*, and opens the circuit of signal *S*. Sleeve relay r^3 is adjusted to respond to current flowing through it whether or not the subscriber's line is open, so that it is energized over the same path as the cut-off relay R^2 and closes the local circuit of supervisory signal S^2. This lamp does not light, however, on account of the operation of tip relay *r*, which serves to open this circuit. Supervisory relay *r* is adjusted to respond only to current flowing through it when the subscriber's instrument is in use, so that as soon as he hangs up his telephone it is deenergized and the lamp is lighted. A busy test is obtained by the operation of test relay r^5 over a circuit controlled by springs of the supervisory relay r^4.

BINDING POST.

Ray H. Manson, Elyria, O., patents (No. 838,260; dated December 11, 1906; original application filed August 3, 1904; serial No. 219,567; divided and this application filed November 11,



1905; serial No. 286,880) and assigns to the Dean Electric Company, Elyria, O., a binding post.

This patent covers a binding post which may be stamped from sheet metal, and which is specially applicable to a telephone receiver such as that described in the present inventor's patent Serial No. 219,567, of which the present application is a division. It covers the construction and method of mounting and using a binding post, the features of which will be sufficiently evident from an examination of the accompanying drawings.

SWITCHBOARD CORD REEL.

Edward B. Craft, Chicago, Ill., patents (No. 840,200; dated January 1st, 1907; filed February 13th, 1906; serial No. 300,881) and assigns to the Western Electric Company, Chicago, Ill., a switchboard cord reel.

The object of this invention is to provide a device for holding a switchboard cord when not in use. In the apparatus is a sheave *b*, which is rotatably secured in frame *a*. The cord passes around this sheave and through an opening b^3 in the flange, being fastened at c^3 near its fixed end c^1 to the side of the sheave. The idle portion c^3 of the cord is wrapped around a drum *d*. This

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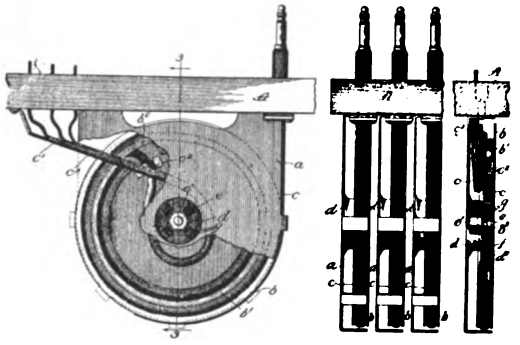
drum is of less diameter than the sheave, so as to provide space for the flop of the idle portion of the cord as the cord is removed and restored. A chamber *f* is adapted to contain the mechanism, preferably consisting of a helical spring *g*, for operating the sheave. This spring is connected at one end with one of the lugs d^1, and at the other end with hub b^3 of the sheave. A feature in connection with the use of the device that is mentioned in the patent is that it lends itself readily to use above the switchboard, where it may be mounted on a shelf, so that the operator may draw the cords down instead of up in making a connection.



SOUND SENSITIZER.

Marcus Frank, Cincinnati, O., patents (No. 836,674; dated November 27, 1906; filed September 13, 1906; serial No. 334,544) a sound sensitizer.

The object of this invention is said to be "to render the transmission of sound to the ear clearer and more distinct by increasing the volume of sound." The inventor believes this can be accomplished by enclosing feathers in a small bag to be placed over the ear piece of the receiver.

TELEPHONE RECEIVER SWITCH.

James McMahon, Oakdale, Cal., patents (No. 836,202; dated November 20, 1906; filed July 24, 1906; serial No. 270,988) a telephone receiver switch.

A switch mechanism, to be located within the receiver instead of in connection with the hook, is described. Mounted between the limbs of the receiver magnet is a combination of switch springs, suitably insulated from one another. The longest of these springs is movable, and adapted to control the contacts Its free end is attached by means of a pin to the front end of a lever, which is pivotally secured at the end nearer the neutral point of the magnet, working in a slot cut in the receiver case. When the receiver is grasped in the hand this lever is forced inward until its surface lies within the circumference of the receiver surface, and when thus displaced effects the changes in positions of the switch springs which are necessary to complete the talking circuit.

SEMI-AUTOMATIC TELEPHONE SYSTEM.

Arthur T. M. Thomson, London, England, patents (No. 12,565; reissued November 20, 1906; original No. 809,232, dated January 2, 1906; application for reissue filed May 2, 1906; serial No. 314,898) a semi-automatic telephone system.

The object of this invention is to provide a telephone system in which the subscribers' lines terminate upon spring jacks in a switchboard. Associated with each spring jack is a calling lamp and a clearing out lamp. In the operation of the system when the calling lamp is lighted a "calling" operator inserts a plug into the subscriber's jack. The act lights a supervisory lamp on a second plug before a second operator, known as the "called" operator, and sets in motion mechanism which has been set by the subscriber whose station is equipped with special apparatus, which causes the number desired to be transmitted over the line, and indicated upon a suitable device at the switchboard. The "called" operator thereupon inserts a "called" plug corresponding to the supervisory lamp which she sees lighted, into a spring jack bearing the number displayed upon the indicator, which is that of the called subscriber. Bells for both "calling" and "called" subscribers are thereupon automatically caused to ring. When the subscribers have completed a conversation, and hung up their telephones, a clearing out signal is given by the illumination of the clearing out lamp associated with the jack of the calling subscriber. The "calling" operator disconnects, and in so doing transmits a disconnect signal to the "called" operator, who completes the clearing out of the connection. The system is described somewhat in detail, reference being made to no less than 33 separate drawings.

APPARATUS FOR TREATING THE BUTT ENDS OF POLES.

John T. Logan, Texarkana, Texas, patents (No. 836,592; dated November 20, 1906; filed March 13, 1906; serial No. 305,865) an apparatus for treating the butt ends of poles.

This device consists of an open top vat into which poles may be set endwise with butt ends down. After being so placed they are to be surrounded with creosote, which may be heated by steam let into the vat from a boiler through suitably disposed pipes. Means are provided whereby, when the butt ends of the poles have been heated sufficiently to expand all the air in the cells, the hot creosote may be suddenly let out of the vat, immediately after which cold creosote is allowed to flow in. The change in temperature will cause the rarefied air in the cells of the wood to contract and draw in the cold creosote.

CORD CIRCUIT.

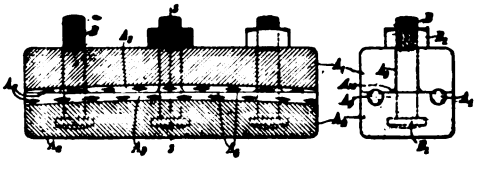
W. W. Dean, Chicago, Ill., patents (No. 834,272; dated October 30th, 1906; filed December 29th, 1902; serial No. 137,001) and assigns to the Kellogg Switchboard & Supply Company, Chicago, Ill., a telephone system.

In certain telephone systems, where cut-off relays and other auxiliary devices are connected with one side of the telephone line, a connection between two such lines is unbalanced. The object of this invention is to provide a cord circuit which will insure a balanced condition during conversation. This is accomplished by cross connecting the strands of the cord circuit, so that the tip of one plug is connected through to the ring of the other plug, and vice versa. The separating of the two portions of the cord circuit for signaling purposes is accomplished through the use of separate sets of supervisory relays for each half of the circuit, and the use of condensers between these sets of relays, in the usual manner.

WIRE CABLE CLAMP.

John H. Cook, New York, N. Y., patents (No. 838,500; dated December 11, 1906; filed October 21, 1901; serial No. 79,352) and assigns to Henry B. Newhall, Plainfield, N. J., a wire cable clamp.

This clamp is composed of a back *A*, preferably made of cast iron, into which are rigidly secured, by casting, bolts *B*. A cover, A_1, also cast, is formed with three holes, provided at their inner ends with countersunk enlargements, so that the cover may be readily put in place on bolts *B*. Grooves A_3 and A_4 extend along the length of the clamp on either side of the centre, these grooves being in both back and cover. As shown in the drawing, at the central portion of the clamp the grooves extend equally into both cover and back, but near the ends the grooves are formed principally in the back. This curved form of the grooves is claimed to give the clamp a better grip upon the cable, since the latter is wedged into their deeper portions. The grooves are provided at intervals with gripping projections, A_6, formed at angular intervals of 90° around the interior surfaces, and preferably of pyramidal or diamond contour.



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BECAUSE NO ATTENTION IS REQUIRED AFTER INSTALLED

You are instructed not to shout in a telephone, as you can hear better by talking in a natural, distinct voice.

The same rule applies to our perfect system of signals—they are clear and distinct to the operator and not confusing like lever blows of hammers.

GRAY TEL. PAY STATION CO. HARTFORD, CONN.

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For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

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WANTED—Telephone solicitor. State experience and references. Address, People's Telephone Co., Superior, Wis. 748

WANTED—Telephone men who have had experience at maintenance work, common battery system. Mention age, experience, education and salary expected. Address Box 753, care THE AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 753

WANTED—Position as superintendent or foreman of outside construction with contractor or operating company. Twelve years' experience, principally cable construction. First-class cable splicer. Address Box 754, care THE AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 754

WANTED---Continued

WANTED—Position as Manager or Superintendent of telephone plant, salary must be not less than $100. Most any locality satisfactory. Twelve years experience with Bell company, 30 years of age. Address Box 750, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 750

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For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

FOR SALE—1,000 Kellogg magneto telephones; Viaduct Mfg. Co. ringers; Wabash Cabinet Company's back boards and battery boxes. Good condition, almost new. Will sell singly or in lots. For particulars, write Kinloch Telephone Company, C. W. Shands, Purchasing Agent, St. Louis, Missouri. 755

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Form G-90-E.	For Small Exchanges, Rentals only.
Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
Form G-90-H.	One subscriber to a sheet; carries account 12 years.
Form G-90-I.	For Small Exchanges; Bound Books; carry 12 subscribers on a page for 1 year.

THE Edwards-Hine Co.

TELEPHONE SYSTEMATIZING DEPT.

5 and 7 PEARL STREET (EAST), GRAND RAPIDS, MICH., U. S. A.

THE VALUE OF A MEASURING INSTRUMENT

Suppose you have a line in trouble—grounded or open. You don't know the exact location, but you send out a troubleman to hunt it up and clear it. It may take him an hour or a day. Meanwhile the subscriber is getting hot under the collar and saying things about telephones in general and yours in particular.

If you have a Pignolet voltmeter or volt-ammeter you can determine the approximate location and also get an idea of the nature of the trouble. With the information your troubleman can find the fault in jig time, and you will have prevented the subscriber kicking by giving him service at the earliest possible moment.

Does it pay to be informed? You ought to know.

LOUIS M. PIGNOLET, Originator of the Voltmeter Habit

78 CORTLANDT ST., N. Y.

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IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

PRACTICAL TEST OF WOOD PRESERVING COMPOUND.

THE Carbolineum Wood Preserving Co., 126 Reed street, Milwaukee, Wis., has recently received from one of its customers the following letter:

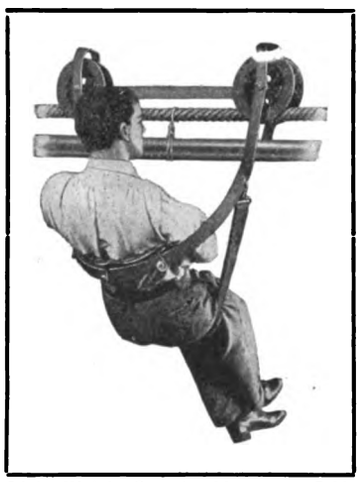
"Six years ago in rebuilding one of our trestles we coated half of the work with Avenarius Carbolineum in order to demonstrate its advantages. The timbers that were coated, at this time, are in as good condition to-day as the day they were put in. Those that were not coated were found this spring to be rotten and unsafe and were replaced with new timber. We performed this same experiment in similar work four years ago, with practically the same result. The timber not coated at that time shows considerable rot, while the other is as good as new. Three years ago we decided to use Avenarius Carbolineum on all new work and we think we will be amply repaid.

"BRIER HILL IRON & COAL CO., Youngstown, O.
"R. C. STEESE, Supt."

This compound is being extensively used by telephone companies, and is said to make the poles to which it is applied last several years longer than those which are untreated.

A NEW MESSENGER CABLE CAR.

AMONG the many new "good things" that the F. Bissell Company, of Toledo, O., is putting on the market is an improved messenger cable car, a cut of which is herewith given. This car is not only lighter than former cars, but it has several new features. The lightness of the car, the weight being only 28 pounds, enables one man to handle it with marked dexterity, while former cars, because of the great weight, have been more difficult for one lineman to handle. Light malleable wheels are provided with deep wide grooves that permit the car to be very easily moved over the cable hooks. The most noteworthy feature of the new cable car is the manner in which the lineman is carried. In the old style cars a lineman is carried directly under the cable, the operator being carried with face looking straight up or down the line. In working he is usually compelled to "dodge" from one side to the other under the cable. With Bissell's new car the lineman may be seated on either side of the cable, while a safety back strap permits him to work easily with both hands. This back strap is provided with a cushion back rest, as seen in the cut, which makes the strap easy on the back and also acts as an insulator. The lineman is thus brought in direct view from a side position, while the strap may be lengthened or shortened to give other advantageous positions. In every way the new contrivance has so marked superior points over many old style cars as to make it welcome among those who have to do such hazardous work as is often necessary on aerial cables.



Light Weight Security Messenger Cable Car.

DECISION ON PROTECTIVE APPARATUS PATENTS AFFIRMED BY COURT OF APPEALS.

THE decision of the United States Circuit Court, giving to the Sterling Electric Company, of Lafayette, Ind., the exclusive right to U. S. Patent No. 641,373, on protective apparatus, has recently been affirmed by the judges of the United States Circuit Court of Appeals. This decision covers nine other patents, upon which were brought separate suits which were to be determined by the decree on the suit which was tried. The Sterling Electric Company has announced its intention of restraining the appellant, Frank B. Cook, from the further manufacture of apparatus under these patents, and of demanding an accounting for all such apparatus which has in the past been made and sold.

NEXT WEEK'S ELECTRICAL SHOW AT CHICAGO.

CHICAGO'S Electrical Trades Exposition has become an annual event. Long before the close of the first show of a year ago more than one-half of the exhibitors expressed their approval by contracting for space in the coming show, and all the remaining available space on the main floor of the Coliseum has now been taken. Under the direction of Managing Director Homer E. Niesz there has been sold for the coming show 25 per cent more space than was occupied a year ago, the number of exhibitors is proportionately larger, and while all the larger concerns represented a year ago are still in the list, there are many big firms in the 1907 show that were missing a year ago.

No effort or expense has been spared that will tend to make the exposition attractive to the general public as well as those directly or indirectly interested in the allied electrical trades or interested as exhibitors. Ellery's Band will furnish attractive musical programs every afternoon and evening, and scores of interesting things have been prepared to offset in a measure the "trade" aspect of the show. The show will open Monday night, January 14, and will run from 10:00 A. M. to 11.00 P. M. every day but Sunday until January 26. The opening will be a formal affair, largely by invitation. Throughout the two weeks there will be several special days and a number of conventions and meetings. Thursday, January 17, will be the anniversay of the birth of Benjamin Franklin, and in honor of this event handsome souvenirs will be distributed. Wednesday, January 16, the annual meeting of the Northwestern Electrical Association will be held, continuing Thursday and Friday. Wednesday night, January 16, the Sons of Jove will have a rejuvenation, and many officers and members of the order from various parts of the country will attend to assist in the initiation of several new candidates. Monday, January 21, has been designated as "telephone" day, when appropriate souvenirs will again be distributed. Wednesday, January 23, is another souvenir event —Thomas A. Edison day. The American Electrical Salesmen's Association will meet Thursday, January 24, and the Illuminating Engineers' Society is scheduled to meet Thursday evening, January 17.

It is said that the majority of the exhibitors in this year's show have made elaborate arrangements in the preparation of their booths and dispiays. Should this be uninteresting to the general public—and this is next to the impossible—then there will be plenty to divert the mind from the "trade" show. Prof. W. J. Clarke, of Mt. Vernon, N. Y., who entertained thousands of people at the electrical show a year ago with his demonstrations, has been engaged for this year's show. Prof. Clarke has many new and wonderful things to show, including highly perfected moving pictures, preceded by a set of mechanical slides that demonstrate that "moving" pictures do not move at all, and that the effect is simply an optical illusion. Prof. Clarke will also demonstrate electrical welding, wireless telephony, the loud-speaking telephone, the talking arc lamp, the X-Ray and Tesla's high frequency experiments.

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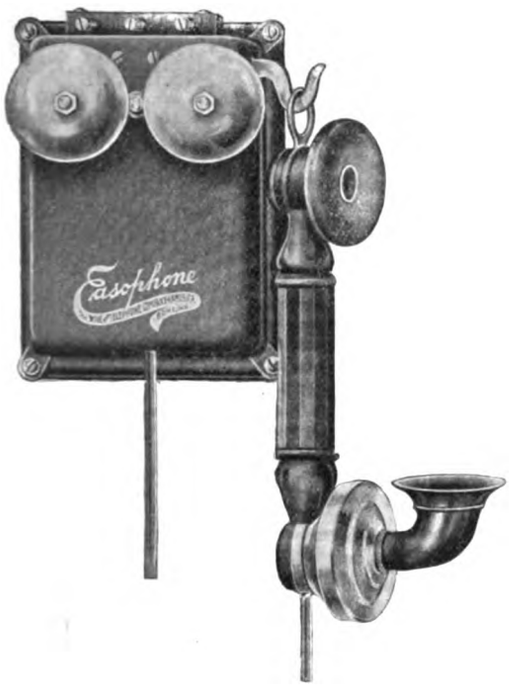

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Long Distance Hand Telephone
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SOLID BACK TRANSMITTER
NO EXPOSED CONNECTIONS
SINGLE COIL RINGER
REVERSIBLE HOOK

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THE WIRE & TELEPHONE COMPANY OF AMERICA
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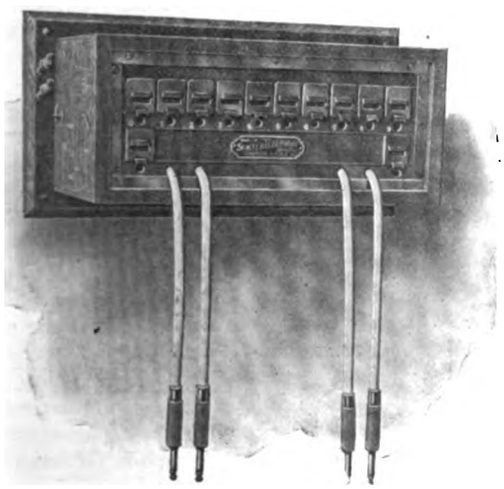
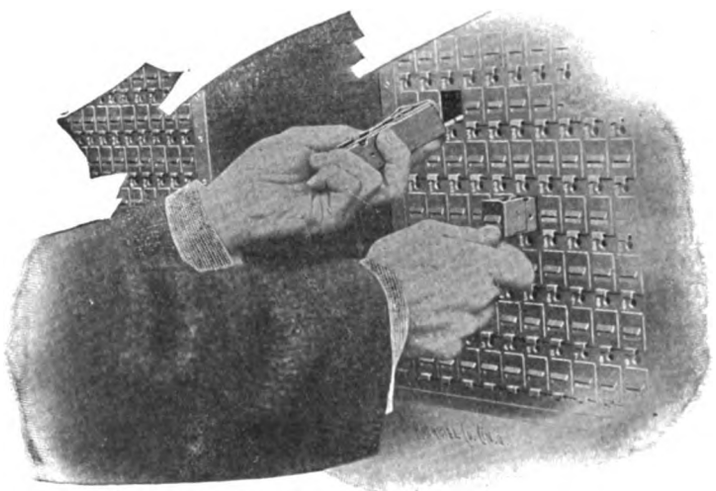
SMALL SWITCHBOARDS

Instant Interchangeability. Do You Realize What It Means?





Standard parts, simple in construction and operation

Each drop can be removed with the hands alone, no screws, solder or pins, just pull them out

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The Sumter Tel. Mfg. Co., Sumter, S. C.

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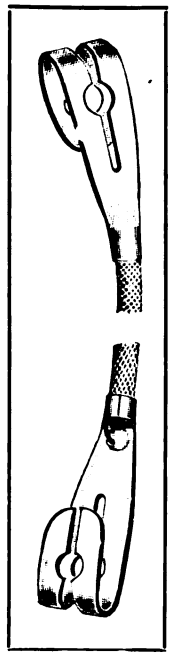
IN THE MANUFACTURING FIELD

Perhaps the most wonderful of the inventions to be demonstrated will be the long distance test of Dr. Cahill's telharmonium. The greatest distance that the music of this marvelous instrument has been transmitted has been in the vicinity of 100 miles. Consequently the effort to transmit it from New York to Chicago will be watched with no little interest. The music will be furnished from the instruments of the New York Electric Music Company over the wires of the American Telephone & Telegraph Company through the office of the Chicago Telephone Company.

THE P. D. BATTERY CONNECTOR.

AS a device capable of being used for making good and reliable connections between the terminals of dry cells the P. D. battery connector seems to be worthy of careful attention from battery users. The appearance of the device will be evident from an examination of the accompanying illustration. It is fitted in place by simply pushing it on the binding post, and once installed it appears to give as good contact as could be desired. The carrying capacity of this contact is insured by the resilience of the turned over points, which give an even bearing on both nut and shoulder, and also by the firm grip secured on the binding post itself. The open slot, which makes it unnecessary to remove the nut to make a connection, is a very convenient feature of this device.

The connecting strand between the two terminals is made up of tinsel covered with braided insulation, so that an ample carrying capacity in a durable conductor is assured. These connectors have been given a thorough trial in automobile work, where they are said to have given excellent satisfaction. As under such conditions they are exposed to especially exacting requirements, including a vibration which tends to decrease the reliability of contacts, it is expected that they will amply fulfill the requirements of telephone service. The company will be pleased to give further information, or a sample, to interested persons.



The PD Battery Connector.

THE SWEDISH-AMERICAN TELEPHONE COMPANY, Chicago, Ill., has prepared for distribution a pamphlet containing reproductions of a large number of very interesting testimonials to the efficiency of its telephone apparatus. These come from operating men in the Middle West and all speak of the very satisfactory service which is being given from instruments and equipment manufactured by this company. It will be pleased to send copies of this booklet to interested persons.

THE JONAS BATTERY COMPANY, of Toledo, O., capital $150,000, was recently incorporated by J. N. Bick, A. W. Bick, L. M. Fox, H. F. Bossard and Marion Bossard. The company will manufacture a special dry battery for telephone service.

MR. H. C. BARBER, of Pittsfield, Mass., for several years employed by the Stanley Electric Company, has resigned to accept the position of superintendent of the Trumbull Electric Manufacturing Company, of Plainville, Conn., manufacturers of the well known Trumbull switches.

THE B-R ELECTRIC & TELEPHONE MFG. COMPANY, Kansas City, Mo., has recently been incorporated in Oklahoma, in order that it may have all the advantages to be derived from such an incorporation in carrying on its business in that territory. J. C. Walton, of Oklahoma City, has been named as territorial agent for the company.

THE MONARCH ELECTRIC & WIRE COMPANY, Chicago, Ill., opens the new year with the announcement that, as Mr. S. Mankowitz will be no longer connected with the company, the management will henceforth be under the personal supervision of the following officers: Louis A. Schwab, president; Henry Schwab, vice-president and secretary; N. Deutsch, treasurer. These three gentlemen have all been connected with the company for many years, and will be assisted by an able staff, the members of which will have charge of the various departments. This will place the company in a better position than ever to take care of its constantly increasing business.

THE AUTOMATIC ELECTRIC COMPANY, Chicago, Ill., reports that at present it has nearly $7,000,000 worth of orders on hand to be filled. These include some large plants, Denver, Omaha, San Francisco and Chicago being among the number. So much has its business grown during the past year that the factory has been more than doubled in size and trebled in capacity by a new addition which will be available within a short time.

During the past year the Automatic Electric Company issued and sold the last $1,000,000 of its $5,000,000 capital stock, to provide additional working capital for its increased business.

Perhaps the most important contract which the company will handle this coming year will be for the 100,000 line exchange to be built in Chicago by the Independent Telephone Company of Chicago, a $10,000,000 corporation, which has been formed by some of the leading financiers in the Independent movement.

The greatest development of the automatic business the past year has been on the Pacific Coast. Contracts have been made during the past year for automatic plants at San Francisco and Oakland in California, at Portland, Oregon, and at Spokane, Tacoma, Bellingham and Walla Walla, Wash., as well as for large additions to the Los Angeles automatic system.

THE W. G. NAGEL ELECTRIC COMPANY, Toledo, O., has a considerable number of interesting articles in the January number of its *Electrical Times*. There are two pages of useful electrical and mechanical tables, and an especially interesting feature is a two-page article upon the method of using the Hercules anchor sold by this company. The usual current price summary is included in this issue. Copies will be sent free of charge by the company upon receipt of applications.

THE BLAKE SIGNAL & MFG. COMPANY, 246 Summer street, Boston, Mass., reports that large sales of its well-known insulated staples, and Blake Compressed Cleats are now being made to the smaller telephone companies. These companies are beginning to realize, as the larger companies did some time ago, that although the first cost of insulated staples is greater than that of bare staples, their use finally results in a decided economy, as the interior wiring upon which they are used is far less likely to be subject to short circuits, grounds and other troubles than that held in place by insulated tacks.

THE PIERRE ELECTRICAL & NOVELTY SUPPLY STORE has recently started in business at Pierre, S. D. It is prepared to handle all sorts of electrical supplies.

The business is managed by Walter S. Rowe, formerly owner of the Capital City Telephone Company's exchange at Pierre. He will be pleased to hear from all intending purchasers of electrical supplies in his part of the country.

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SPECIAL SOUVENIR DAYS—Benj. Franklin Day, Thursday, Jan. 17; Telephone Day, Monday, Jan. 21; Thomas A. Edison Day, Wednesday, Jan. 24.

SPECIAL DATES FOR ORGANIZATIONS—Northwestern Electrical Association, Jan. 16, 17, and 18; Illuminating Engineers' Society, Jan. 17; Rejuvenated Sons of Jove, Jan. 16; American Electrical Salesmen's Association, Jan. 24.

FOR ANY OTHER INFORMATION ADDRESS

HOMER E. NIESZ, Managing Director

Electrical Trades Exposition Co., 1006-7 Monadnock Bldg.

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THE WEEK'S MESSAGES

NEW COMPANIES.

EL PASO, ILL.—Articles of incorporation have been filed by the Pleasant View Telephone Company, of El Paso. The company has an authorized capital stock of $800 and the incorporators are A. W. Shepard, W. H. North and W. G. Stokes.

TULSA, I. T.—A number of Chicago and Tulsa capitalists have made application to the city council for a franchise for an Independent Telephone Company. The new company, if the franchise is granted, promises much lower rates.

JEFFREY, KY.—The Peters Creek Telephone Company, of Monroe County, has been incorporated with a capital stock of $200. Among the incorporators are W. H. Smith, P. L. Samson and James Moore, of Jeffrey.

BETHEL, ME.—The Greenwood Telephone and Telegraph Company has been organized at Greenwood, for the purpose of constructing and maintaining telephone lines in Greenwood, Woodstock and Bethel, in Oxford county. The company has a capital stock of $2,500, and the officers are: President, E. L. Tebbets, of Auburn; treasurer, E. P. Farrington, of Greenwood.

BREWSTER, MINN.—The Brewster-Round Lake Telephone Company, of Brewster, has filed articles of incorporation. The capital stock is given at $20,000 and the incorporators are F. R. Geyerne, C. R. West and A. L. Wells, Brewster C. Nienaber, T. Bahis, Round Lake.

ROCKWOOD, MINN.—Articles of incorporation have been filed by the Farmers' Telephone Company, of Rockwood. It has an authorized capital stock of $10,000, and among the incorporators are D. W. Thurston, Isaac Foster and C. B. Barnes.

CARTHAGE, MO.—The farmers in the neighborhood of Carthage, Mo., have organized an Independent telephone company with the following officers: President, Leslie Smith; secretary, Benjamin Jones; treasurer, Peter Wakefield; superintendent, Harry Waddell.

NEMAHA, NEB.—The Farmers' and Merchants' Telephone Company, of Nemaha, has filed articles of incorporation. The company is capitalized at $25,000, the shares having a par value of $25 each. The corporation is to have a life of fifty years, and the liabilities are limited to $5,000. The following directors have been elected: M. W. Knapp, William Maxwell, John Crother, Henry Seid, Rufus Rowen, J. I. Webber, W. W. Seid, Earl Gilbert, J. E. Crother and others.

RICHMONDVILLE, N. Y.—The Richmondville, Seward & Sharon Telephone Company has been incorporated with a capital stock of $3,000, and the following directors have been elected: O. R. Mann, Richmondville; Virgil Winnie, Seward, and J. E. Preston, Sharon Springs.

OKLAHOMA CITY, OKLA.—Articles of incorporation have been filed by the Canadian Valley Telephone Company, of Oklahoma City. The incorporators of the new company are Lewis Rockwood, B. F. Dougherty and R. Schunemann and its capital is placed at $500.

CENTERVILLE, S. D.—A consolidation of the Ege and Riverside telephone exchanges has been effected. Centerville has been selected as headquarters by those who have incorporated a company for the consolidation of the two systems. The company has been incorporated under the name of the Centerville Telephone Exchange Company, with an authorized capital stock of $50,000 and a paid up capital of $26,000. The incorporators of the new company are Frank R. Dirks, Fred Krause, W. J. Henrich and Charles Prinslow.

KARLSBURG, WIS.—The Burnett County Telephone Company, of Karlsburg, has been incorporated with a capital stock of $1,000. Among the incorporators are A. J. Myrland, S. Lundquist, P. J. Peterson and F. L. Peterson.

FRANCHISES.

BERKELEY, CAL.—Despite a great deal of opposition, the Home Telephone Company has succeeded in obtaining a franchise in Berkeley, the sum paid to the trustees of Berkeley for such franchise being $47,000.

GRANGER, MO.—The Farmers' Telephone Company, of Dallas Center, has applied for a franchise to construct and operate a telephone exchange at Granger.

NEW MEMPHIS, TENN.—The Looking Glass Prairie Telephone Company has been granted a franchise by the Village Board of New Memphis and will soon commence the construction of its system at this place.

PULLMAN, WASH.—A twenty-year franchise has been asked of the city council of Pullman, Wash., by the Inland Telephone Company.

STRATHCONA, ALB., CAN.—The franchise recently applied for by the city of Edmonton at Strathcona has been granted. Address Mayor Davidson, Strathcona, or City Engineer Keely, Edmonton, Alberta.

FINANCIAL.

RICHMOND, IND.—The Richmond Home Telephone Company has increased its capital stock from $150,000 to $400,000.

TROY, N. Y.—The Commercial Union Telephone Company has declared a semi-annual dividend of three per cent, payable January 2.

NEWARK, OHIO.—At the regular meeting of the directors of the Newark Telephone Company the quarterly dividend of two per cent was declared on the common stock, and three per cent semi-annual dividend on the preferred stock, payable January 1. Owing to the increased business of the company it will be necessary to install a new switchboard.

NEW CASTLE, O.—The New Castle Telephone Company, New Castle, O., has increased its capital stock from $5,000 to $10,000.

CORSICANA, TEXAS.—The capital stock of the Corsicana Telephone Company has been increased from $50,000 to $100,000.

COMBINATIONS.

CAIRO, ILL.—Arrangements have been perfected by which a consolidation will be effected between the Cairo Telephone Company and the Central Home Telephone Company, the latter being the new long distance company. This merger will give the subscribers to the Cairo exchange long distance connections. The name of the new company will be the Home Telephone Company, and H. R. Alsthorpe will be president. Among the many improvements planned by the owners of the company are the erection and equipment of a new exchange, and the extension of its lines in many directions.

ALMOND, WIS.—The Almond Telephone Company has recently acquired the Plainfield lines, and now owns and controls lines from Almond to Stevens Point, Plainfield, Hancock, Wautoma, Wild Rose and Waupaca, besides a great number of farmers' lines.

TORONTO, ONT., CAN.—The Stark Telephone, Power and Light Company has purchased the Erindale Power and Telephone Company for $47,500.

ELECTIONS.

COLUSA, ILL.—The Colusa Telephone Company, Colusa, Ill., has elected the following officers: R. T. Wooley, president; C. F. Boyd, vice-president; L. L. Newton, secretary; Thos. Shaw, treasurer. It is the company's intention to erect a new exchange building.

MIDDLETOWN, ILL.—The following directors have been elected by the Middletown Mutual Telephone Company: Gilbert Gunsten, Middletown; H. A. Binns, Middletown; William Behrens, Greenview, and A. L. Dalton, Middletown.

FREETOWN, IND.—The following officers have been elected by the Freetown Telephone Company: President, C. R. Mann; vice-president, Calvin Bowman; secretary, Walter Harbaugh; treasurer, Albert De Long; superintendent, H. H. Tinch.

SPENCER, IOWA.—The following officers and directors have been elected by the Northern Rural Telephone Company, of Spencer, Iowa: President, Harry Heikens; vice president, B. D. Dunning; secretary, G. W. Greaves; treasurer, L. B. Peeso; superintendent, E. C. Starks; directors, J. T. Goldsworthy, L. C. Anderson, J. C. Johnston, J. L. Berkholder, Fred James and M. Doty.

COXSACKIE, N. Y.—The Upper Hudson Telephone Company has elected the following officers: President and treasurer, A. A. Gardiner; first vice-president and secretary, Harrie McK. Curtis; second vice-president, Alberti Baker; collector, Wakley Best.

NEWS—WANTED

THE matter contained upon the message and Operating Field pages of this paper is contributed largely by our special correspondents. We believe, however, that there are many valuable items of telephonic interest which are never brought to the attention of the public. There is no reason why this condition should exist, and the Editor, therefore, invites all telephone companies and the officials of such companies, to furnish any information that they can consistently make public relative to financial statistics, new construction, elections, franchises and personal items.

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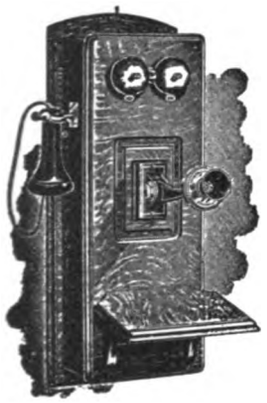

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THE WEEK'S MESSAGES

EAST HANOVER, N. Y.—The officers of the East Hanover Telephone Company are: A. S. Rank, president; Wm. Gerberich, vice-president; J. R. Mader, secretary; treasurer, Samuel Fry.

WATERFORD, ONT. CAN.—The Norfolk County Telephone Company has elected the following directors: S. L. Squire, P. G. Pearce, Waterford, Ont.; H. Barthelomew, county of Norfolk, Ont.

MISCELLANEOUS.

SULPHUR, I. T.—The telephone plant at Sulphur, I. T., has been acquired by O. O. Spencer and R. S. Goffe, who will make improvements in the system.

ST. JOSEPH, MICH.—Citizens who favor an Independent telephone system in competition with the Twin City Telephone Company, controlled by the Michigan State Telephone Company, have petitioned the common council to grant the franchise asked for by the Stromberg-Carlson Telephone Company, which would operate in this city and Benton Harbor. About 500 have signed this petition, and a few have signed a petition asking the council to shut out the competition. Benton Harbor council voted to grant a franchise in that city, but the mayor vetoed the franchise, and it will come up to the council for passage over the mayor's veto.

TOLEDO, O.—The Toledo Home Telephone Co., of Toledo, O., reported that during the holiday season contracts were signed for telephones to be furnished as presents for quite a number of people.

WAYNESBURG, PA.—The Greene County Telephone Company has made arrangements with the Farmers' Mutual Company to use their poles from Washington to Amity, and with the Ruffs Creek Company from Amity to Waynesburg.

PERSONAL.

O. F. FRENCH, formerly general manager of the Cuyahoga Telephone Company, of Cleveland, has recently taken the position of managing engineer with the National Engineering Corporation ,of Baltimore, Md.

D. P. GEMMIE, formerly manager of the Crest exchange of the Cuyahoga Telephone Company, has accepted the position of manager of the Gallipolis Telephone Company, Gallipolis, Ohio.

J. K. JOHNSTON, general manager of the Tuscarawas County Telephone Company, New Philadelphia, O., has recently been appointed general manager of the Sandusky Telephone Company, Sandusky, O., which position he will hold in addition to the one at New Philadelphia. The Sandusky Telephone Company proposes to make some changes in its switchboard and to put up about 20,000 feet of aerial cable, making improvements to the extent of about $25,000 to $30,000. When this work is completed the Sandusky company is expected to make rapid advances.

E. D. KRAMER, formerly traffic manager of the U. S. Telephone Company of Ohio, has resigned and will go into business in his home city of Dayton, Ohio.

H. E. PLUMMER resigned the position of superintendent of exchanges with the Cuyahoga Telephone Company, Cleveland, O., on January 1 to accept the position of traffic manager with the Louisville Home Telephone Company, Louisville, Ky. Mr. Plummer will have charge of both operating and maintenance.

New Construction in the Field

DECATUR, ALA.—A telephone cable is now being laid across the Tennessee River by the new Independent Long Distance Telephone Company, which will give subscribers in Decatur connection with the principal cities of the North. The Independent company now has connections between Decatur and Birmingham and intermediate points and is extending its lines to the south of Birmingham into Mobile and New Orleans. The company owns city telephone systems in the Decaturs, Birmingham, Mobile, Nashville, Louisville and many other cities and is extending its local and long distance service all over the South and North.

JONESBORO, ARK.—Considerable construction work is being conducted by the Home Telephone Company on its plant at Jonesboro.

CLAYTON, ILL.—The Home Telephone Company, of Quincy, is to build lines to Clayton and establish an exchange there. It is the company's intention to offer first-class service in competition with the Bell company.

CLINTON, ILL.—Lines are being constructed by the National Telephone and Electric Company to Kenney, Wyanesville, Beason and Lincoln.

HOLLOWAYVILLE, ILL.—The lines of the Farmers' Mutual Telephone Company are being extended in many directions.

RISING SUN, IND.—The Farmers' Telephone Company, of East Enterprise, is building a line to connect with the exchange at Rising Sun.

TERRE HAUTE, IND.—A private telephone system has been installed by the Vandalia Railroad. It is the road's intention to effect a connection with the Citizens' Company.

CENTERVILLE, IA.—The Boone County Telephone Company, of Boone, contemplates the extension of its lines to Centerville.

MASON CITY, IOWA.—The Albert Lea Telephone Company is extending its lines in Mason City.

SPENCER, IOWA.—The Northern Rural Telephone Company, of Spencer, Iowa, which now has over 1,200 farmers' telephones in Clay county, contemplates the installation of a new central energy exchange at Spencer to replace its present magneto system. Many other improvements will also be made in its rural lines.

CRISFIELD, KAS.—Lines are being erected between Crisfield and Attica by the Crisfield Telephone Company. In all about fifteen miles of new lines will be built.

LIBERTY, KAN.—A new switchboard has been installed by the Liberty Independent Telephone Company, and other improvements are contemplated.

LUDINGTON, MICH.—Many improvements are being made in the system of the Lake Shore Telephone Company at Ludington.

AURORA, MINN.—A new exchange is to be installed at Aurora, Minn., by the Mesaba Telephone Company, of Mesaba.

WINONA, MINN.—The Winona Telephone Company is making many extensions in its lines.

HUME, MO.—Among the many improvements planned by the Hume Telephone Company is the installation of a new switchboard at Hume. It is the company's intention to also establish an exchange at Foster.

HELENA, MONT.—The Montana Independent Telephone Company, with headquarters at Butte, Mont., is to install a new plant at Helena, which it is estimated will cost in the neighborhood of $175,000. It is also the company's intention to establish an exchange at Anaconda.

UNADILLA, N. Y.—Many new lines are being built by the Unadilla Telephone Company at New Berlin.

NAPOLEON, OHIO.—The Home Telephone Company is rebuilding part of its system at Napoleon, and expects to make its plant strictly up-to-date in every particular.

YORK, PA.—The York Telephone Company has under consideration the erection of a new building in which to install its exchange.

COLUMBIA, S. C.—The Rural Telephone Company, of Columbia, S. C., has under consideration the extension of its lines to Littleton.

TOMBSTONE, TEXAS.—The Tombstone Telephone Company, which has built lines to Bisbee and Benson, expects soon to establish connections between Tombstone and all the principal towns and cities in Arizona.

COLOMA STATION, WIS.—The lines of the Coloma Telephone Company are being overhauled.

EAU CLAIRE, WIS.—New lines are being built by the Shaw Telephone Company of Eau Claire.

MILWAUKEE, WIS.—The Milwaukee Independent Telephone Company is to build lines throughout the state, touching as far north as Appleton.

OSSEO, WIS.—A line is being built from Osseo through the town of Clear Creek, Eau Clair County, by the Osseo Telephone Company.

EDMONTON, ALBERTA, CAN.—The public works department of the Alberta government is making arrangements for the construction of a public telephone line between Edmonton and Lloydminster, and is advertising for bids for the material required. Starting at Edmonton, the line will follow the general direction of the C. N. R., but the greater part of the way will follow the section and range lines. Every town on the railroad between Edmonton and Lloydminster will be connected with the system, and later on inland towns will be connected by branch lines.

UNDERGROUND.

MENDON, ILL.—The Mendon Telephone Company is placing some of its wires underground.

LAFAYETTE, IND.—The Lafayette Telephone Company has commenced its underground work at Lafayette.

RICHMOND, IND.—The Richmond Home Telephone Company is about to begin the laying of its underground cables.

DETROIT, MICH.—The City Council of Detroit has passed an ordinance requiring all wires to be placed underground within a mile circle in Detroit.

SPRINGFIELD, MO.—In the installation of the Springfield Home Telephone Company's plant at Springfield will be included considerable conduit work.

GREAT FALLS, MONT.—Considerable underground work is to be done by the Independent Telephone Company of Butte in the installation of its new system at Great Falls.

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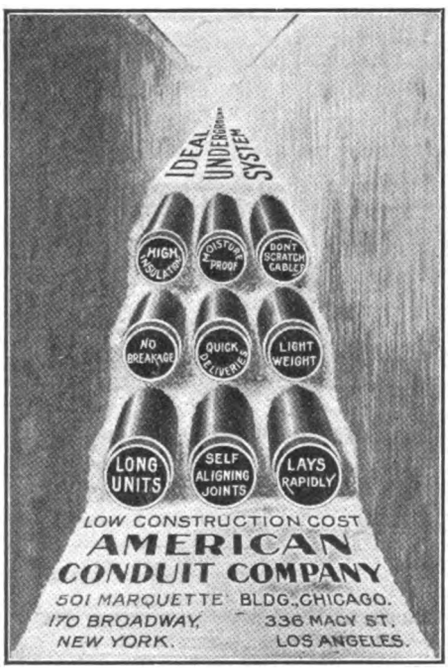

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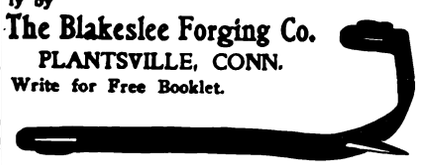

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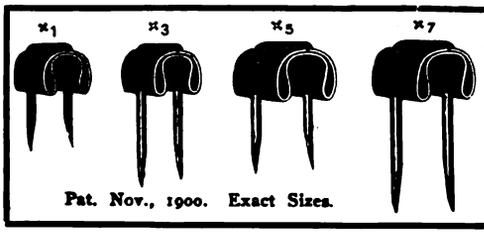

Pat. Nov., 1900. Exact Sizes.
Blake Insulated Staples
Blake Compressed Cleats
Manufactured and For Sale by
Blake Signal & Mfg. Co.
246 Summer St., Boston, Mass.

Exact size. Patented July, 1906.

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The Smallest Magneto Telephone

DIMENSIONS.

Width	5 inches
Depth	4 inches
Height	7¼ inches

The Wesco Long Distance Residence Telephone Model No. 51 is the smallest and most compact Magneto Telephone made.

It is especially designed for use in residences where wall space is limited and where ornamental design and beauty of finish are as essential as the efficiency of the working parts.

It is equipped with our Standard Receiver, Hook-Switch, Long Distance Solid back Transmitter, 80 ohm ringer and 3-bar Generator, each part being the best that money can buy. It is also made with 4-bar Bridging Generator with 1,000, 1,600 and 2,000 ohm ringer movement.

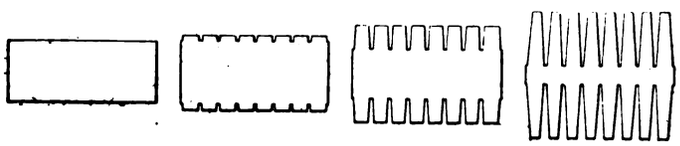
Write for General Telephone Supply Catalog and our monthly net price list.

"EVERYTHING ELECTRICAL"

THE WESCO SUPPLY COMPANY

Branch Warehouse:
Ft. Worth, Texas

St. Louis, Missouri



The Large Contact Surface

The large contact surface of the Gould Battery plate is secured by our patented process of "spinning." The diagrams show the development of a large contact surface for active material out of a "blank" of sheet lead, without the removal of or addition of any metal. It will pay you to investigate the *Gould Integral Plate* before buying a telephone battery.

Write for our new booklet "Gould Telephone Batteries."

SALES OFFICES
Boston—80 State St.
Chicago—Rookery Bldg.
San Francisco—Monadnock Building.
Toronto, Ont.—62 Wellington St., West.

Gould Storage Battery Co.

MAIN OFFICES
1 West 34th St.,
New York City.
Works, Depew, N. Y.

JUST A SUGGESTION

Take one of your busy 4-party lines and equip it with "POOLE" Lock-Outs. Leave it in service a month and then see how many of the four will stand a raise of $3.00 a year rather than go back to the old way. We know the answer, but we want your subscribers to impress on you the fact that the "POOLE" Lock-Out is a rate-raiser.

It won't cost you anything to try it, because we will loan you the Lock-Outs free and there is no other equipment required. Write today for our Booklet AL-2.

Mountain State Electrical Company

WHEELING, W. VA.

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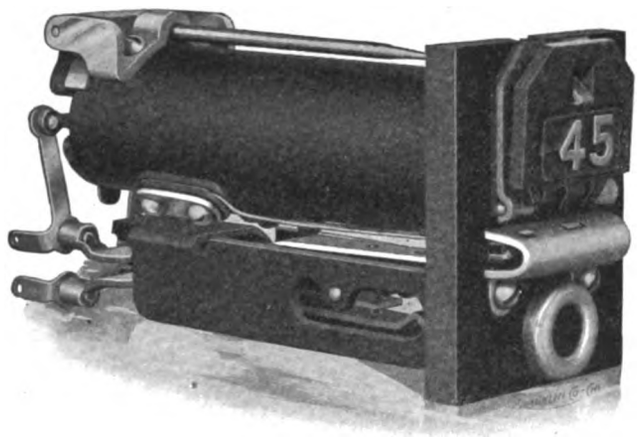
DEAN TELEPHONE APPARATUS

MAGNETO SWITCHBOARDS



Our combined drop and jack used in our express type switchboards is of the mechanically self-restoring type, having many novel and valuable features which are in keeping with other Dean apparatus.

The drop is of the large tubular type, having more turns of larger wire than other drops of this kind now on the market. This means higher impedance, less liability to break down of the winding and a more sensitive and powerful action.

The winding is removed without disturbing the magnetic circuit or adjustment of the drop mechanism. This makes the windings absolutely interchangeable so that they can be withdrawn and replaced in a few seconds without the least possible chance to go wrong.

The night alarm contacts are positive acting and are located in plain view, so as to be seen from the front of the switchboard—furthermore, they are platinum.

The cut-off springs in the jacks are also platinum pointed.

The restoring mechanism is simple and positive.

We have originated many other valuable details in magneto switchboard construction.

Our new Folder No. 6, a copy of which will be mailed free on request, describes in full many valuable features.

Factory and General Office
Elyria, O.

Branch Office
Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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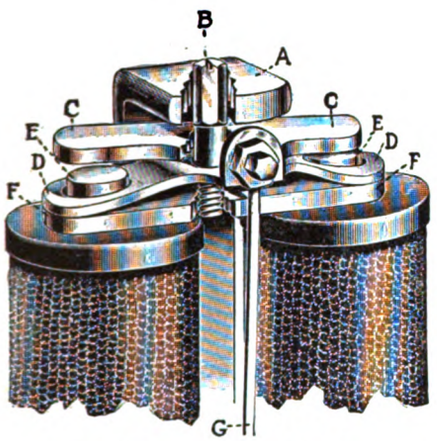
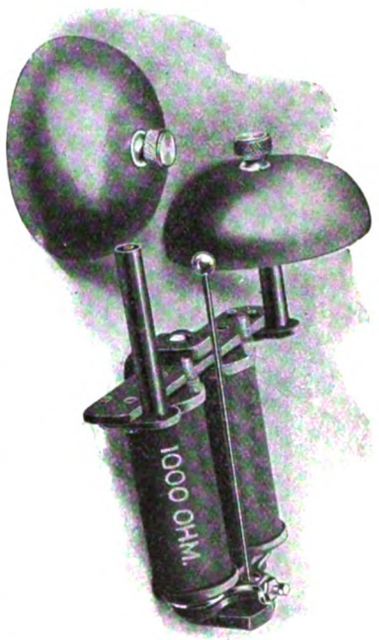
QUALITY—DURABILITY—EFFICIENCY

THESE features are essential and have made our self-contained Ringers famous. They are in use on all our Central Energy and Magneto Instruments. The permanent Magnet A is made of the finest grade of magnet steel, carefully tempered. The adjustment screw B is made of heavy brass which will perform its work without twisting. This screw is hexagon in shape and slotted, adjustment can thus be made by screw-driver or wrench. The armatures C and cores E are made of annealed soft iron. The plate which supports the armature is made of spring brass of sufficient thickness to possess the proper tension. The yoke F is of heavy brass, forced with great pressure over the cores E, holding them firmly in place. The adjustment of the Ringer is effected by turning the screw B, which has a shoulder resting on plate D, the lower end being threaded into plate F. Long life and perfect satisfaction are assured.



Showing Sectional View of Armature End



Complete Ringer

Do not fail to see our Exhibit at the Electrical Show, Chicago, Jan. 14th to 26th inclusive. We have some special features of interest to you.

ROCHESTER, N. Y. **STROMBERG-CARLSON TELEPHONE MFG. CO.,** CHICAGO, ILL.

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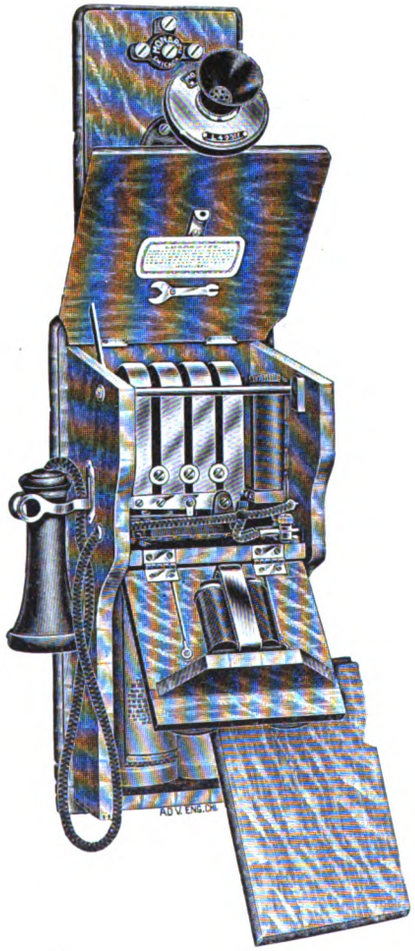
MONARCH



"Characteristics"

Monarch Telephones of all styles embody certain features which have come to be known as the "Monarch Characteristics." Perfect mechanical construction is the first and foremost. Every little detail is given the most careful consideration and the finished parts are naturally efficient and durable. Simplicity is another very desirable feature and is always noticeable in Monarch products. Convenience of assembly is given its share of study and consideration, with the result that every part can be removed easily and quickly.

The removable shelf in the telephone and the removable drop coil in the switchboard are two examples of this characteristic. Little appliances and conveniences to save time and annoyance are sought and when found are embodied in the apparatus. The gong damper on the compact telephone is one of these, which is appreciated by subscriber as well as operator.

There is a reason why Monarch Apparatus gives just the service desired. Study its characteristics and the reason is apparent. Catalogues will be sent upon request.

Monarch Telephone Mfg. Co.
CHICAGO, U.S.A.

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Let Them Rubber

They don't like telephones if they kant

"Lissen In"

ANDRAE MILWAUKEE

They Kan't Kripple Survis

The only true and praktikal solusion of the Rubbering problem is

Andrae's New Condenser

One party can call another or ring central no matter how meny resevers are down. The expense is trifling. A boy kan put them on and they need no attention. Nuthing to get out uv order, the instruments talk better and always ring. Even Transmission is not affected by "Lissening In."

RITE FOR A SET ON TRIAL.

Julius Andrae & Sons Co., Milwaukee, Wis.

99 W. WATER ST.

Rent your subscribers a system of

Couch Automatic Intercommunicating Telephones

with trunk button for exchange connection.

It's an "operator-less" private branch exchange, giving automatic intercommunication between departments.

Any station can secure immediate city exchange connection by the pressure of the trunk button.

Ask us about it

STANDARD SIZES:

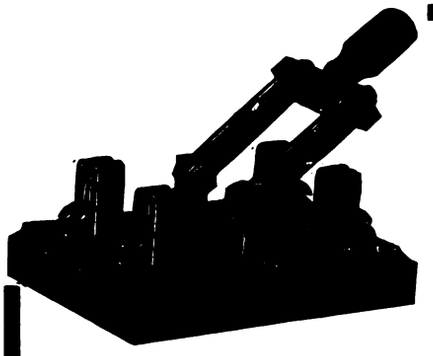
8	intercommunicating buttons,	1	exchange button		
14	"	"	1	"	"
18	"	"	1	"	"
24	"	"	1	"	"
28	"	"	1	"	"

100% CHEAPER THAN BRANCH EXCHANGE

100% QUICKER; 100% MORE SATISFACTORY.

S. H. COUCH CO., Inc., Manufacturers

162 PEARL STREET, BOSTON, MASS.



To Protect Your Rural Lines

in an efficient and economical manner install

TRUMBULL All Copper Switches

in series with the line at the sub-stations. Then when a thunder storm is imminent the subscribers open the circuits. If the switch is placed between the lightning arrester and the line, many a tedious trip to clear grounds will be obviated and consequently the maintenance charges will be reduced.

Trumbull switches are the only ones which should be used for this purpose, as they possess mechanical and electrical advantages not found in any other type.

ASK FOR OUR NEW CATALOGUE

TRUMBULL ELECTRIC MFG. CO.

618 Woodford Ave., PLAINVILLE, CONN.

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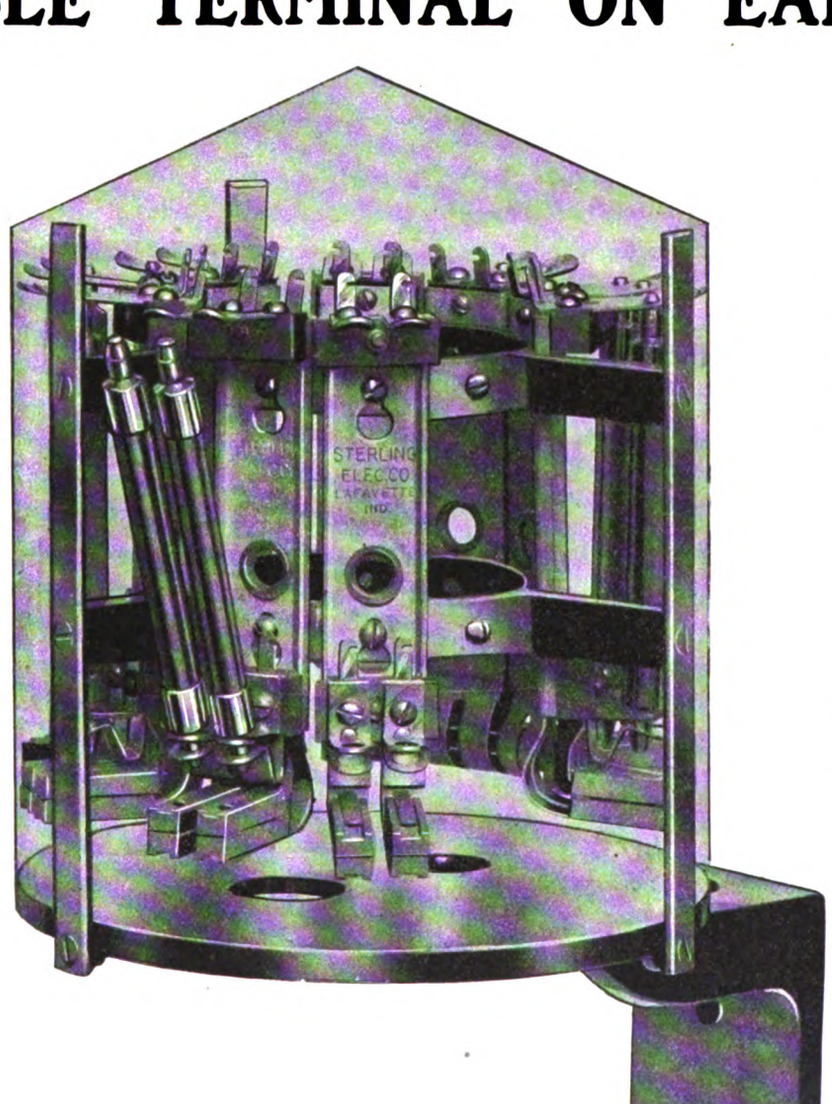
Picture Puzzle

FIND THE SMALLEST AND BEST CABLE TERMINAL ON EARTH

Buy the iron frame with galvanized cover, and get the protection in unit or pairs as required.

Made with or without carbons. Ten pairs and up.



IT'S A SNAP.

The Fuses are our well-known type of "Snap in" easy-to-take-out kind.

Note how the units are mounted on the iron frame.

1/2

Actual Size.
THINK OF IT.

1/2

Actual Size.
THINK OF IT.

EASY, ISN'T IT?

Write us and we will tell you *how easy* it is to handle your cable work with this (unit) type terminal.

Makers of Good Goods **STERLING ELECTRIC CO.** **LA FAYETTE, IND.**

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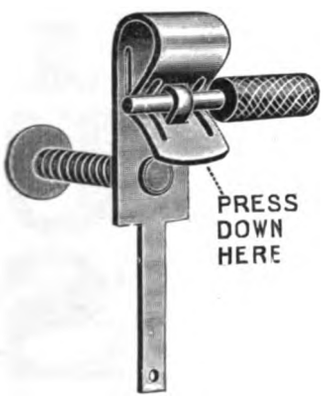
DEMAND that your supply house gives you what you ask for. Undoubtedly you won't have any trouble in buying batteries equipped with FAHNESTOCK SPRING BINDING POSTS. But to save time in connecting the batteries, to save money in lower maintenance charges, and to save trouble because they don't cut the wires and cannot shake loose or corrode, be sure to specify them in your order.



Remember, they don't cost a cent more, and all battery manufacturers equip batteries with them when requested.

Sample Post Free. Write for it.

FAHNESTOCK ELECTRIC CO.
129 Patchen Avenue, Brooklyn, N. Y.

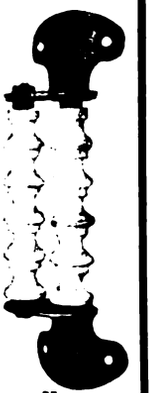
ROBINSON
Distribution Rack

For Distributing from Pole-House or Can-Top Direct to Telephone.

No. 1 comes in 5 to 8 pair racks.

No. 2 comes in 10 to 16 pair racks.

Send for descriptive matter and prices.



The W. G. Nagel Electric Co.
No. 1. **26-30 St. Clair St., TOLEDO, O.** No. 2.

U. S. COMBINED
Cash Register and Pay Station
[The PIONEERS in this line]
THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.
A cash ticket with every collection.
A tape numbered from 1 to 2,000 does the work.
Cash always accounted for.
No Errors,
No Disputes,
No Troubles.
It protects both patron and company.
It keeps collections right.
It makes you money.
Write at once for particulars and catalogue.

THE
United States Coin Register Co.
TOLEDO, OHIO

ORANGEBURG
FIBRE CONDUIT
For Underground Systems
Write for Catalogue.

THE FIBRE CONDUIT COMPANY,
Orangeburg, N. Y.
Boston Office, 110 State St. Chicago Office, 1700 Monadnock Bldg.
PIERSON, ROEDING & CO.
San Francisco, Cal.
Los Angeles, Cal.
Seattle, Wash.

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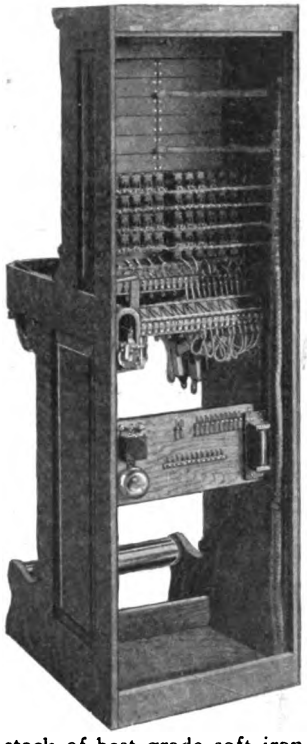
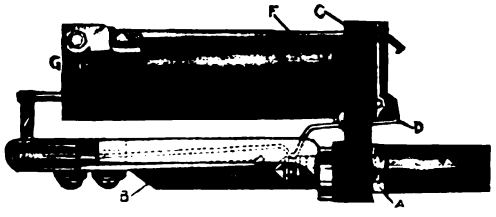
KELLOGG

TELEPHONE APPARATUS



Magneto Switchboards

CONTAIN THE KELLOGG SELF-RESTORING COMBINED DROPS AND JACKS



Our combined drop and jack which is used in all our Express type Switchboards is made up of a sensitive tubular drop mounted with a reliable spring jack on the same strip. The above view shows the drop with shutter restored after plugging in. The line or tip spring of the jack is sufficiently elongated to project through an opening in the mounting strip and by its rise, due to the insertion of the plug, restores the drop shutter. The upward movement of the tip spring opens contact with the local jack spring, thus cutting the drop winding out of circuit. This means of mechanically restoring the shutter is by far the simplest of any yet devised. No additional parts whatever are required to perform this operation.

THE DROP is of the tubular iron-clad type, machined from solid stock of best grade soft iron, protected from corrosion by heavy copper plating and oxidized. The armature and core are of the same grade of iron.

THE ARMATURE is supported on trunnion screws through the agency of a one-piece metal bridge, insuring extreme sensitiveness. The armature can not freeze to the core or shell, as the drop forces the lever down so that the catch will always engage and retain the shutter. Each tube is entirely insulated from the mounting strips and from the other tubes.

THE WINDING is best quality, silk-covered copper wire, insulated from all metal parts of the drop. The tubular part of the drop, including the winding, can be removed from the mounting independently from the jack without unsoldering any connections.

The only tool required is a small screwdriver.

EACH JACK consists of a rigid brass frame on which the German silver tip and local contact spring are fastened with hard rubber separators for insulation. The sleeve connection is a tubular screw with a hexagonal head. It passes through the mounting strip and is fastened to the jack frame by two pins. All connections are absolutely reliable and are easily removed when desired.

THE MOUNTING STRIPS are of sheet brass faced and backed with polished hard rubber. The drop shutters, attached to the front of this mounting, are provided with removable metallic number plates. Each drop will operate a night alarm contact when the shutter is in calling position. This does away with the unsatisfactory method of establishing night alarm contact through the hinge of the drop. With our construction we guarantee positive results.

Note the neat, even mounting of the drops and jacks in the cut of switchboard.

Write for "Bulletin No. 9A," which completely describes our Magneto Switchboards.

BRANCH OFFICES:

PHILADELPHIA, PA.	CLEVELAND, O.	KANSAS CITY, MO.	LOS ANGELES, CAL.
Keystone Tel. Bldg.	Electric Bldg.	1413 Main St.	318 W. Second St.

KELLOGG SWITCHBOARD & SUPPLY COMPANY
CHICAGO, ILLINOIS, U.S.A.

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20 Pair Bank—No. 10.

Cook's No. 10 Protector

COOK'S No. 10 Protector is so radically different in principle and design from previously existing types of switchboard protective apparatus, and has so many vital points of improvement, that from an engineering standpoint, it belongs in a class by itself. The following features alone are enough to recommend it to every careful, conservative, conscientious telephone engineer:

1. *The heat coil is not made of wire; it cannot burn out or short circuit.*
2. *There are no loose contacts in the circuit.*
3. *There cannot be a defective coil in the circuit.*
4. *The springs of each pair are separated and insulated from all adjacent springs.*
5. *No bolt connections are used to transpose the line and the switchboard terminals; consequently there can be no loose connection in the circuit.*

Cook's No. 10 Protector is a resoldering but not a self-soldering protector.

It is mechanically and electrically simpler and better than *any* protector on the market.

16,000 pairs of No. 10 were installed at St. Louis main office—the largest single protector rack made.

Write for descriptive bulletin and prices.

Frank B. Cook.

MANUFACTURER,

238 West Lake Street, CHICAGO, ILL.

You Wouldn't Start a Horse Car Line

in this age of electric cars? Not if you wanted to make money out of the business of transportation.

Then why should you start a manual telephone exchange in this age of automatics, if you want to make money out of the telephone business?

The automatic system of telephony bears the same relation to the manual system that the electric car does to the horse car. It is the apotheosis of telephone development, as the electric car is of transportation development.

The automatic telephone system produces the best service more economically than indifferent service can be produced with manual equipment.

There is no more question as to the relative popularity of the automatic and manual telephone service where the two kinds are in competition than there is as to the relative popularity of the trolley car and the horse car.

And, as for the securities—the same comparison may be applied with the same results.

Our Automatic system has been adopted in the following cities:

Aberdeen, S. D.	Clayton, Mo.	Jonesboro, Ark.	Ocean Park, Cal.	Springfield, Mo.
Akron, Ohio.	Cleburne, Texas.	Lake Benton, Minn.	Pentwater, Mich.	St. Marys, Ohio.
Albuquerque, N. M.	Columbus, Ga.	Lewiston, Me.	Portland, Me.	Tacoma, Wash.
Allentown, Pa.	Columbus, Ohio.	Lincoln, Neb.	Portland, Ore.	Toronto Jct., Can.
Auburn, Me.	Dayton, Ohio.	Los Angeles, Cal.	Princeton, N. J.	Traverse City, Mich.
Auburn, N. Y.	El Paso, Texas.	Manchester, Iowa.	Richmond, Ind.	Urbana, Ill.
Battle Creek, Mich.	Fall River, Mass.	Marianao, Cuba.	Riverside, Cal.	Van Wert, Ohio.
Bellingham, Wash.	Ferguson, Mo.	Marion, Ind.	San Diego, Cal.	Walla Walla, Wash.
Berlin, Germany.	Grand Rapids, Mich.	Medford, Wis.	San Francisco, Cal.	Watch Hill, R. I.
Buxton, Iowa.	Hastings, Neb.	Miamisburg, Ohio.	Santa Monica, Cal.	Wausau, Wis.
Cadillac, Mich.	Havana, Cuba.	Mount Olive, Ill.	Sioux City, Iowa.	Westerly, R. I.
Champaign, Ill.	Hazleton, Pa.	New Bedford, Mass.	South Bend, Ind.	Wilmington, Del.
Chicago, Ill.	Hopkinsville, Ky.	Oakland, Cal.	Spokane, Wash.	Woodstock, N. B., Canada.

AUTOMATIC ELECTRIC COMPANY, VAN BUREN and MORGAN STS. CHICAGO U. S. A.

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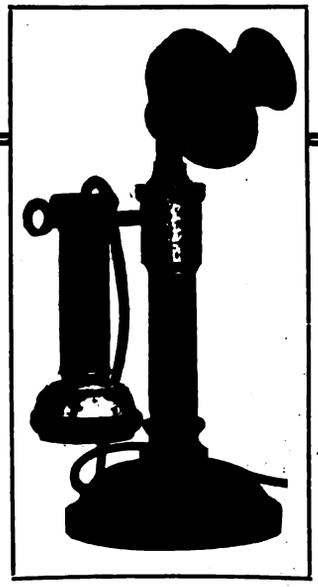
Sharpsville, Ind.,
Dec. 26, 1906.
Swedish-American Telephone Co.,
Chicago, Ill.
Gentlemen:
The 4 telephones recently shipped us have arrived and you are certainly to be complimented for making such superb instruments. The cabinets are fine and the wiring the finest I ever saw. Cutting the secondary and running the wires down for a condenser is a most happy thought. We will want some more soon.
Respectfully yours,
W. C. Turney,
Sharpsville Telephone Co.

No. 99.



No. 70.

Myrtle, Miss.,
Dec. 5, 1906.
Swedish-American Telephone Co.,
Chicago, Ill.
Gentlemen:
Replying to yours of Nov. 30th, will say that if I need any telephone goods will order from you. I am more than pleased with the goods I got from you, and I will say that I wish I had been dealing with you all the time for I believe you have the best telephone made.
Yours truly,
J. R. Johnson.

¶ You are bound to be pleased with our product. They please you because they please and satisfy your patrons. Do not contract for your 1907 telephone requirements until you get our proposition. It will prove to be decidedly interesting to you. Write us to-day.

SWEDISH-AMERICAN TELEPHONE CO., Chicago

Branch, 115 West 6th Street, Kansas City, Mo.

REASONS WHY

YOU SHOULD INSTALL

THE CALCULAGRAPH

No. 1

See "Reason Why" No. 2 Next Week.

IT MAKES NO CLERICAL ERRORS

When the operator pulls the lever at the beginning of a toll conversation, the exact time of day is stamped on the ticket. When the patrons are through talking she pulls the lever, stamping the exact elapsed time, *which the Calculagraph has automatically computed.*
There is no guess work, and you have a record that is undisputable.

Write for particulars

CALCULAGRAPH CO.

1437 Jewelers Building **New York City**

Agents for Canada: Northern Electric and Manufacturing Co., Ltd., Montreal.

BARGAINS I have to offer:

300	series extension bells with Holtzer-Cabot, 80-ohm ringers, woodwork refinished, exposed metal parts renickeled, each.	$0.75
100	bridging extension bells, with North 1000-ohm ringers, woodwork refinished, exposed metal parts renickeled, each.....	1.00
1,000	Holtzer-Cabot 80-ohm ringers, each.....	.25
2,200	Viaduct 250-ohm ringers, each.....	.25
500	Kellogg No. 1-A induction coils, in good mechanical and perfect electrical condition, each.....	.15
400	American Express 120-ohm drops and jacks, each.....	.40
200	120-ohm drop coils for repair of American Express drops, each	.25

Terms, f. o. b. Cleveland, Ohio, net cash on receipt of apparatus.

N. E. HABERMAN,

Electric Building, Cleveland, Ohio.

Telephone Wire and Cables

BARE COPPER LINE WIRE

Weatherproof and Rubber Insulated Wire and Cables — **Aerial—Underground—Submarine Lead Covered Cables**

TERMINALS—STEEL STRAND—HANGERS

Standard Underground Cable Company

PITTSBURGH, PA.

Boston. New York. Philadelphia. Chicago. St. Louis. Oakland, Cal.

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Single copies, 10 cents. Subscription price, $1.00 a year. Foreign countries, $3.00 a year.

The American Telephone Journal

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VOLUME XV. SATURDAY JANUARY 19, 1907. NUMBER 3

An Unusual Accident to a Pole Line

By John Putnam.

(Illustrations from photographs by the author.)

TELEPHONE inspectors and trouble-men will talk by the hour of unusual or remarkable experiences that they have been through with the apparatus that came under their charge or about the telephone users with whom they have been in contact, the latter experiences, by the way, being mostly humorous. Linemen and construction men also have their share of such incidents, as this article will show.

The accident to be described happened on the morning of September 20, 1906, at North Haven, Conn., to a trunk line running from New Haven to Hartford. An examination of Fig. 1 will serve to make the situation clear. The caboose standing on the siding was on that morning attached to the rear of a freight train that was being backed into the spur track in order to leave a couple of cars. A brakeman stood at the hand brake of the caboose easily checking the speed of the train, as he supposed, when suddenly he noticed that the speed did not check after all. The train had broken in two and the lonely hand brake was not enough to check the momentum of several freight cars that came sailing into the siding. At the end of the track was the usual rotten wooden bumper and a fifty-foot chestnut telephone pole. The brakeman concluded that the stories of the captain standing on the sinking ship were mostly fiction anyhow, and started on a rapid trip to the village post office on the other side of the track. The train continued on its way, however, and after crashing through the bumper and telephone pole, came to a stop in front of a house at the right of the picture. The owner of the aforesaid house, contrary to the usual habit of property owners, is now of the opinion that telephone poles in front of residences are very desirable. Right of way men are welcome to this incident, and may be able to use it with convincing force in their business, for with the increasing use of automobiles house owners can never tell when it is safe to sit on the front stoop.

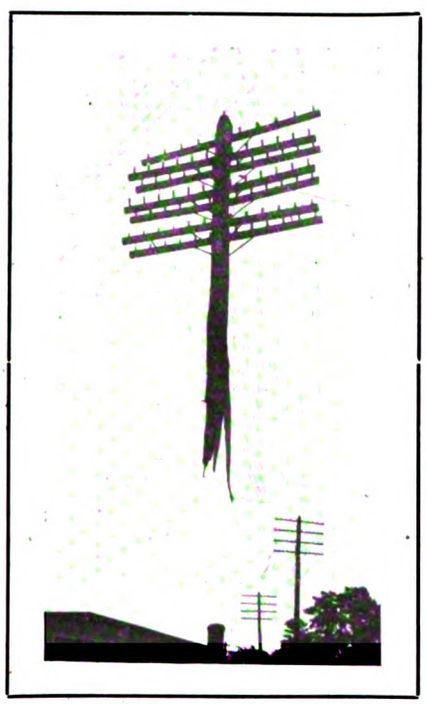

Fig. 2. A near view of the suspended pole top.

Strange as it may seem, only three pair of wires were crossed or broken out of the forty wires on the line. The pole top remained suspended in the air, held by the wires Fig. 2 shows how uncanny the pole top looked. Many readers have undoubtedly seen Kellar, the magician, perform a trick in which he places a beautiful woman with her head on one chair and her feet on another. Then, taking away the chairs, he leaves the young lady horizontally in the air and passes a hoop around her body. The only difference between this trick and our telephone pole top is that in the latter case one can see the wires.

The broken pole was side guyed to a tree, the pole end of the guy being visible to one who carefully examines the illustrations. This equalized the strain on the line.

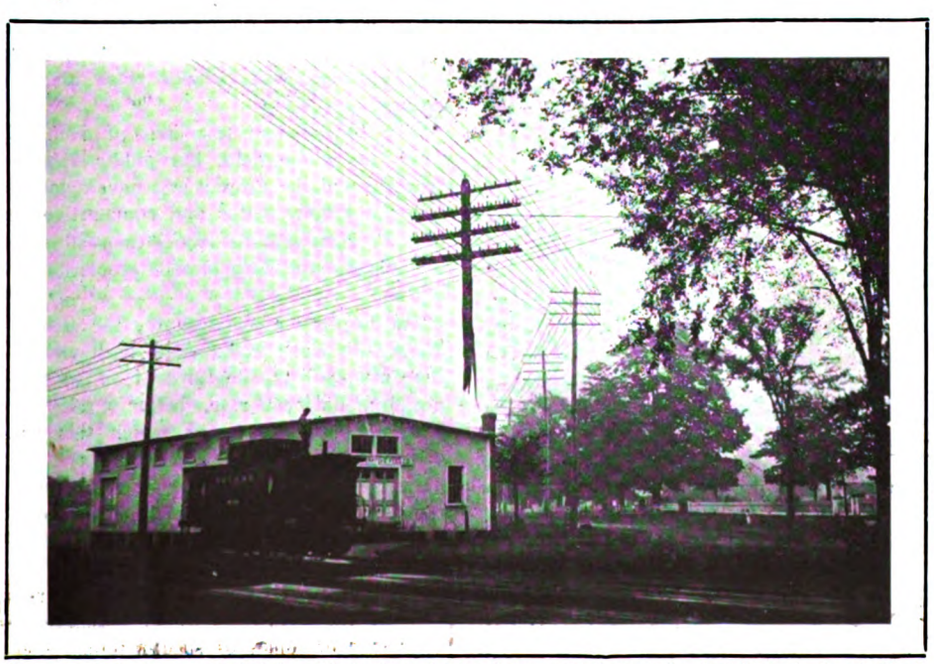

Fig. 1. Pole top suspended in mid-air, base having been carried away by freight train knocked off the track.

While making the photographs the photographer remarked to an interested small boy: "If the wires stay up like that, what is the good of poles? The telephone company could save money by not using them." The answer was a look of utter disgust at the writer's ignorance as the youngster replied: "Huh, I guess if the other poles had been busted the wires would 'a' come down all right."

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The South Dakota Convention

THE fourth annual convention of the South Dakota Telephone Association was called to order Jan. 9th by C. B. Kennedy, of Canton, president of the association.

A roll call of members of the association showed that there was a good representation. After some discussion as to who should be allowed to be present at the meetings it was finally decided that all persons directly interested in Independent telephone affairs should be permitted to attend the open sessions, but that no representatives of the Bell interests should be permitted to enter.

In the absence of W. T. Doolittle, of Sioux Falls, who was scheduled to make the address of welcome, E. D. Morcom, secretary of the Citizens' Telephone Company of Sioux Falls, appeared. He heartily welcomed the delegates to the city, and assured them that the citizens of Sioux Falls would spare no efforts to make their stay a pleasant one. President Kennedy responded to the address in behalf of the association and afterward delivered his annual address. He alluded to the bitter struggle in Iowa and other States between the Bell and Independent interests, and called attention to the fact that as telephony is comparatively new in South Dakota the feeling here is not yet so intense as in some other States. He spoke of the development of the rural systems in South Dakota and pointed out that the people have awakened to the fact that the telephone is an important public utility and a daily necessity in their homes.

He spoke of the fight, almost to the death, throughout the land between what is termed the octopus and the Independent companies, and stated that the American people are equal to the occasion; that they have found ways to climb mountains and will find ways out of the condition which now confronts them. He expressed the opinion that telephony cannot be monopolized and that it must be administered in the interests of and for the benefit of the people.

He pointed out that the only company acknowledging its Bell affiliations which is now doing business in South Dakota is operating in a small district in the extreme eastern portion of the State.

President Kennedy among other things denounced some competitive methods, declaring that a free telephone is as objectionable as free passes on a railroad. He urged the harmonizing of conflicting interests. At the conclusion of his address he was vigorously applauded.

On motion of Secretary-Treasurer E. R. Buck the president appointed the following members as a committee on resolutions: Geo. W. Burnside, Sioux Falls; J. A. Steninger, Parker; W. Gibbons, Yankton.

At this juncture the program was on motion suspended for a few minutes for the purpose of admitting a number of new members. About half a dozen additional telephone companies were admitted to membership in the association, and a number of supply companies were admitted to honorary membership.

Following action by the convention upon the admission of new members, George W. Burnside, of Sioux Falls, made an address on the subject of "The Independent Telephone Exchange." He spoke in part as follows :

"The Independent telephone is to the people what the self-binding harvester has been to the farmer. Forty years ago the farmers cradled their grain by hand; to-day it is cut, bound and shocked by machinery. The advances in the mode of communication in the last thirty years have been phenomenal. Thirty years ago if a man wanted to communicate with Chicago he had to write a letter and wait a week or more for an answer; in a short time he will be able to ring up Chicago or almost any other Eastern city and converse with a man over the wires of Independent telephone companies with the greatest of ease.

"The reason for the great advance in the telephone business has been brought about through the interest and energies of the Independent people. The only place where the rates have not been reduced is in the larger cities, where the monopoly still obtains."

The next speaker was George T. Hewes, of Des Moines, Iowa, the subject of his address being "The Clearing House."

J. L. W. Zietlow, of Aberdeen, the guiding spirit in the Dakota Central Telephone Company, made a few remarks on the alleged ineligibility of the South Dakota Association to join the National Independent Telephone Association because it has members from companies which connect with the Bell company. He pointed out that South Dakota was one of the pioneers in the development of the Independent telephone movement. Following these remarks Mr. Zietlow made an address on "The Proper Equipment of the Local Exchange."

The next speaker was P. R. Crothers, of Brookings, whose topic was "Should Trouble Men be Equipped with a Technical Education?" He spoke in part as follows:

"To begin with, the duties of a trouble man are to locate and remove trouble from lines, cables, telephones and switchboards. After the trouble is located, its removal will depend as much on his mechanical skill as on his technical education, but to locate the trouble is sometimes the harder part. In order to properly diagnose a case the doctor must know something of the nature of the disease and of the anatomy of his patient. It is just as necessary for the telephone doctor to know something of the nature of electricity, and to have a knowledge of the general construction and "modus operandi" of the apparatus under his charge.

"He never will know it all. He ought to have enough at least so that when a complicated case of trouble arises his knowledge will enable him at once to reason out the cause of the trouble and the remedy. He ought to understand the use of testing apparatus and know how to make all necessary tests. He ought to learn to first locate his trouble before he began tearing things to pieces. He ought to learn his own limitations and know what to let alone. He ought to know what to do in case of trouble and why he does it. If he should learn something more than all this, he need not be alarmed, it will not hurt him any."

An adjournment was taken until 7:30 o'clock in the evening after J. A. Steninger, of Parker, had delivered an address on "Are Two Exchanges in the Same Town a Double Burden on the People."

The convention reassembled at 7:30 o'clock and the first thing on the programme was a paper by E. A. Bruce, of Yankton, on "Independent Toll Lines." He said, among other things:

"Competition to a community in toll line service is as necessary as competition in any other line of business, and, in fact, telephone competition is of greater benefit to the public. Experience teaches us that it brings to any community a better and larger service, wth cheaper rates to the local exchange subscribers.

"The Independent toll lines of South Dakota do not as yet cover the whole field, but public sentiment favors their construction and the growth and development of the State demands to-day a larger, better and competitive service."

H. P. Hartwell, of Irene, then addressed the convention on the subject of "Telephone Associations," speaking in part as follows:

"We need an association for the mingling and exchanging of thought, to work in harmony with our neighbors, and, not like these monopolists, the Lord of all, to rule or ruin. For equal taxation, uniform rate, better equipment and service; these were the principles upon which this association was formed. Does any one doubt the necessity for continuing an association of this character?"

Mr. A. S. Hall, of Redfield, was then introduced, and made an extremely interesting address on the subject of "Is It to the Interests of Telephone Men That All Toll Lines Connect with Local Exchanges on Equal Terms?"

In the absence of the others who were scheduled to make addresses, the remainder of the evening session was devoted to discussion of topics of special interest to the Independent tele-

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phone men. Until an adjournment was taken, the convention hall was crowded and the keenest interest was manifested in the topics discussed.

Among those who participated in the discussion were J. L. W. Zietlow, of Aberdeen; Geo. W. Burnside, Sioux Falls; E. R. Buck, Hudson; Geo. T. Hewes, Des Moines, Iowa; C. B. Kennedy, Canton; A. S. Hall, Redfield, and J. A. Steninger, Parker.

On motion President Kennedy appointed the following as members of a committee to consult in reference to securing toll line connections in South Dakota, the committee to make a report at the business session to be held Thursday afternoon: A. S. Hall, Redfield; J. A. Steninger, Parker; H. P. Hartwell, Irene; E. R. Buck, Hudson, and P. R. Crothers, Brookings.

The convention then took a recess until 1:30 o'clock Thursday afternoon, January 10.

For the second day's session the convention reassembled at 2:40 o'clock Thursday afternoon. On motion the name of the organization was changed from the South Dakota Telephone Association to the South Dakota Independent Telephone Association. Six more telephone companies were admitted to membership in the association.

The following committee was appointed by the president to investigate the advisability of the State Association applying for membership in the national association, with the understanding that the committee should make a report at the evening session: Geo. W. Burnside, Sioux Falls; H. P. Hartwell, Irene; T. C. Cockerell, Sioux City, Iowa.

The minutes of the last annual convention were read and on motion were approved.

The committee appointed at a prior session to make a report on the policy of toll line connections with town exchanges reported that all toll lines should connect with town exchanges on equal terms.

The following were appointed members of a committee to formulate a specific plan for such connections, with instructions to report at the next annual convention of the association: E. A. Bruce, Yankton; J. L. W. Zietlow, Aberdeen; C. B. Kennedy, Canton.

P. R. Crothers, of Brookings, a member of the taxation committee appointed at the last annual convention, made a verbal report to the effect that, while the committee had not been able to accomplish much, it had been able to secure quite a material reduction in the assessment of farmer lines. The report of the committee was approved and the bill of Mr. Crothers for expenses in making the trip to the State capital to appear before the State Equalization Board was allowed.

The following members were appointed as a taxation committee which is to serve for the ensuing year: P. R. Crothers, Brookings; H. P. Hartwell, Irene; P. A. Zollman, Alexandria.

President Kennedy appointed the following as members of the legislative committee for the coming year: G. W. Burnside, Sioux Falls; P. R. Crothers, Brookings; W. E. Egge, Centerville. The committee will look after general legislation in which the association is interested.

On motion the city of Mitchell was selected as the place for holding the next annual convention. The constitution fixes the time for holding the convention as the second Wednesday in January, 1908.

The present officers were re-elected for the ensuing year, as follows: President, C. B. Kennedy, Canton; vice president, J. A. Steninger, Parker; secretary-treasurer, E. R. Buck, Hudson.

The following members of the executive committee also were re-elected for the coming year: Geo. W. Burnside, Sioux Falls; H. P. Hartwell, Irene; H. B. Ryan, Beresford; P. R. Crothers, Brookings.

The new arbitration committee for the ensuing year was announced as follows: A. S. Hall, Redfield; H. P. Hartwell, Irene; Geo. W. Burnside, Sioux Falls. The convention then adjourned until evening.

It was nearly eight o'clock when the convention reassembled for the evening session. The committee on resolutions reported as follows:

"*Resolved*, By the South Dakota Telephone Association, that we tender our thanks to the president, secretary and other officers for their untiring efforts in making this a very successful year, and this meeting the high water mark in the life of this association.

"Also to the daily papers of Sioux Falls for their full reports of our meetings and courtesies extended; to the supply men for their splendid exhibits and loyal support; to Mr. George T. Hewes, of Des Moines, for his able and instructive paper before the association, and, last but not least, to the citizens of Sioux Falls, notably to the management of the Cataract Hotel and the Citizens' Telephone Company, for their untiring efforts in making our stay among them both profitable and agreeable." A. S. Hall, N. E. Gibbons, J. A. Steninger, committee.

The salary of the secretary of the association, on motion, was fixed at $100 per year, to date from January 1, 1906.

The committee appointed to investigate the advisability of the association applying for membership in the national association recommended that the matter be referred to the executive committee, with authority to take such action as was deemed best.

There being no further business, the convention adjourned.

Following the convention the visiting telephone men, together with a number of local telephone men and other citizens, were guests at a banquet given at the Cataract Hotel.

Concrete Manholes

By O. R. Barnes.

INTERESTING in connection with the extensions of the use of concrete in building is the use of this material for the construction of manholes by telephone companies. The concrete manhole is being adopted rather extensively for cross-country work both in the Eastern and Western States. The new long-distance subway between Chicago and Milwaukee contains them, as do also the subways now under construction between New York and Philadelphia and between Philadelphia and Baltimore. Most of these manholes are built of Portland cement concrete composed of one part cement, three parts clean sharp sand, and five parts three-quarter inch broken stone.

These materials are mixed on a platform close to the work. The excavations for these manholes are approximately eight inches larger than the outside dimensions of the mould and in depth conform to the grade of the subway. Where good solid earth is met with only an interior mould is used, but where there is danger of the sides of the excavation caving in it is necessary to construct an exterior mould. Ordinarily, however, the exterior mould is not required. The moulds are not set up until after the mat or foundation, which consists of a coarser grade of concrete, has been thoroughly rammed into place. It is then constructed as shown in the illustration with stout planks which are held securely by driving the two ends into place. In some cases, in the East, galvanized iron moulds are used for the sides. These moulds are given a coat of grease before the concrete is dumped into place. The concrete for these manholes is mixed in the regulation manner and while fairly wet is dumped into place in twelve-inch layers. Each layer is thoroughly rammed before another layer is allowed to be dumped. A concrete manhole top is constructed, and is held in place while setting by specially constructed supports, and the manhole frame is not set in place until twenty-four hours after the top has been completed.

At approximately every 6,600 feet in the subways for long

(*Continued on page* 38.)

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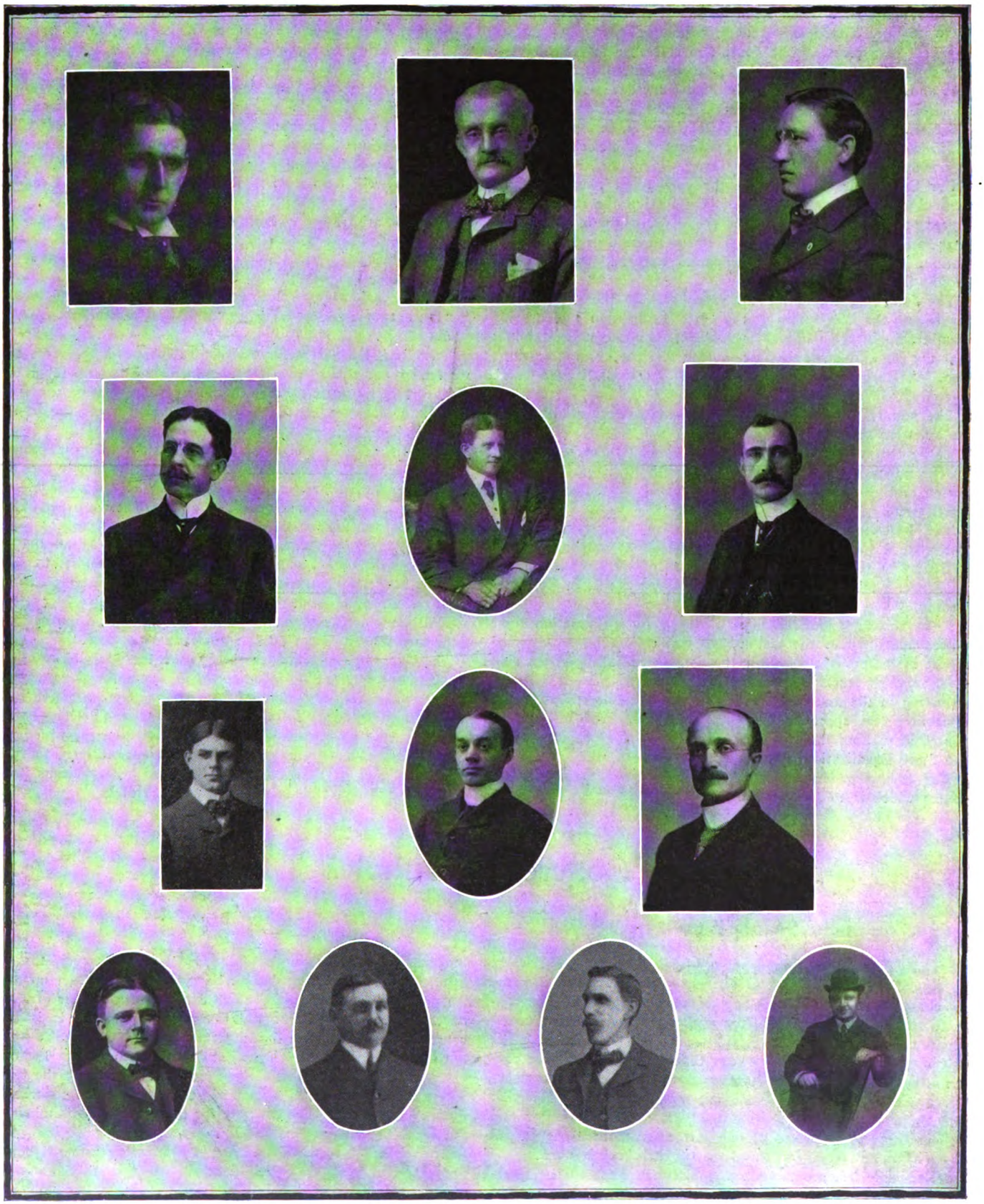
Cedarmen Who Are Prominent in the Telephone Pole Industry



C. H. Worcester. W. C. Sterling. L. L. Hill.
G. L. Lindsley. Ernest L. Clark. H. S. Gilkey.
L. A. Page, Jr. W. C. Sterling, Jr. W. O. Nelson.
J. H. Wall. H. W. Reade. C. H. Slocum. Wm. Mueller, Jr.

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Convention of Northwestern Cedarmen

AT the Spalding Hotel, Duluth, Minn., the Northwestern Cedarmen's Association met for its annual convention on January 8th. This convention is important to all purchasers of telephone poles, as it marks the annual gathering of the men who supply by far the bulk of this class of material to the telephone trade. The leading producers of white cedar poles in Michigan, Wisconsin and Minnesota were present at this meeting and made it one of the most successful gatherings which the members of the organization have ever held.

When the first session was called to order it was found that President M. H. Coolidge had been unable to leave his home on account of illness in his family. In his absence the chair was taken by Vice-President P. W. Raber, of Chicago. Practically the first business before the meeting was the reading of his report by Secretary M. O. Nelson. He referred to a summary of the cedar products during 1906 as compared with the output during 1905, which had been placed in the hands of members. This summary showed that during 1906 there was a slight increase in the production of poles over that for the previous year. This increase, however, might possibly be attributed to the fact that a year ago there were practically no poles in the market, so that the entire demand of the year had to be supplied by new cuttings. The secretary stated that his report was not as complete as he should have liked to see it owing to the fact that the small number of days intervening between the first of January and the annual meeting makes it difficult to get a full report of stocks on hand. Referring to the estimates of cedar to be produced during the coming winter the secretary predicted that, judging by the conditions made evident by the reports sent in to him, the total output of poles will be about the same as last year.

M. H. Coolidge.

T. P. Bradley.

The association devoted a great deal of time to the consideration of matters affecting weight schedules for different classes of poles. This subject, of course, is of importance on account of its special bearing upon the cost of transportation. Reference was made in the proceedings to the fact that market reports have been issued from time to time from the headquarters of the association and that an Eastern freight rate has been published. Reports have been kept at the secretary's office, to be forwarded to members when desired, showing the condition of railway scales over which cedar is weighed.

The association has increased its membership from thirty-two to thirty-eight during the past year and the treasurer was able to show a sufficient balance to indicate that the financial affairs of the association are in good condition.

Considerable time was devoted to a discussion of subjects relating to the shipping of poles and other cedar goods, in addition to a consideration of the method of weighing.

H. S. Gilkey, of Pendleton & Gilkey, Minneapolis, Minn., speaking of general conditions in the cedar trade, referred to several factors which may be expected to increase the cost of logging. Referring to the effect of the relations of supply and demand and the cost of production as determining factors in the value of cedar products, he stated that every member would be able to judge for himself what his product ought to bring during the coming year, thus venturing upon no absolute prediction of prices. Although hauling was commenced about the middle of December, very little has been done so far during this season. Some people are still cutting and skidding, and it is possible that a very considerable part of the stock that has been cut will not be gotten out at all this winter.

This is the most interesting statement concerning the pole trade, as the Pole Committee, of which E. L. Clark is treasurer, had no report to present to the members.

After a discussion of various other matters, the chairman appointed the following Committee on Nominations: H. S. Gilkey, L. R. Martin, M. K. Bissell, W. P. Bowring and E. Huser. After a short recess the committee recommended the election of the following officers: President, P. W. Raber; vice-president, A. T. Naugle; treasurer, W. B. Thomas; directors, one year, Hall L. Brooks; two years, L. R. Martin and E. L. Clark. These recommendations were accepted and elections accordingly made by the members. After a few very pleasant speeches by the newly elected officers, Mr. Gilkey offered a motion extending a vote of thanks to the retiring president, M. H. Coolidge, which was enthusiastically carried. The final action of the convention was the adoption of an amendment to a specification proposed by H. M. Clark, in response to a suggestion made earlier in the day, which reads as follows: "On the specifications for standard telegraph, telephone and electric poles in the sentence commencing 'If poles are green,' the measurement of the tops of five-inch poles is to be sixteen inches in circumference instead of five inches plump in diameter, as at present.

In the evening, after the adjournment of the convention, the members met at a most enjoyable banquet, at which the hosts were the Duluth Log Company, Martin Brothers, L. R. Martin, the Cloquet Tie and Post Company, the Pittsburg and Lake Superior Iron Company and the Marshall H. Coolidge Company.

Wm. P. Bowring.

Among those present at the convention were the following well-known dealers:

P. W. Raber, Raber & Watson, Chicago.

J. W. Benham, Naugle Pole and Tie Company, Chicago.

F. H. Chandler, Marshall H. Coolidge Company, Minneapolis.

H. M. Clark, Clark Pole and Tie Company, Bemidji, Minn.

A. T. Naugle, Naugle Pole and Tie Company, Chicago.

J. W. Naugle, Naugle Pole and Tie Company, Menominee, Mich.

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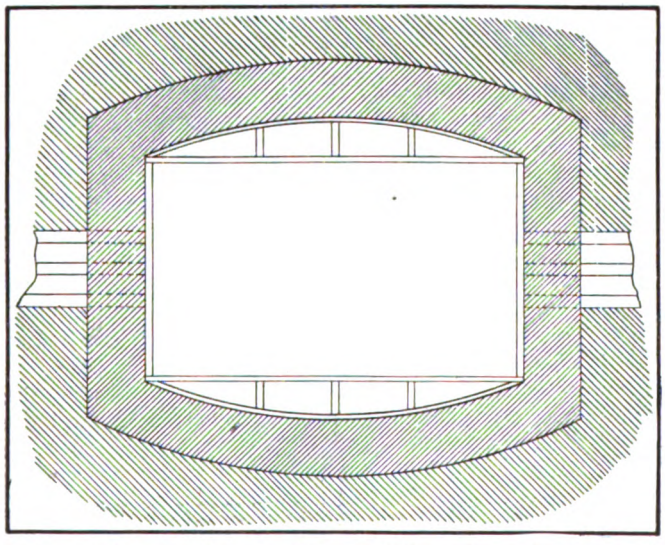
E. D. Beeson, Naugle Pole and Tie Company, Bemidji, Minn.
M. K. Bissell, Erickson & Bissell, Escanaba, Mich.
R. R. Genge, Francis Beidler & Co., Chicago.
J. E. W. Branan, Francis Beidler & Co., Chicago.
J. A. McDavitt, Cloquet Tie and Post Company, Cloquet.
H. M. Dixon, Cloquet Tie and Post Company, Cloquet.
L. L. Hill, Page & Hill Co., Minneapolis.
H. F. Partridge, T. M. Partridge Lumber Co., Minneapolis.
J. P. Miller, Minneapolis Cedar and Lumber Company, Minneapolis.
H. S. Gilkey, Pendleton & Gilkey, Minneapolis.
H. W. Reade, Pittsburg and Lake Superior Iron Company, Escanaba.
N. W. Burrell, The Valentine-Clark Company, Blackduck, Minn.
E. L. Clark, The Valentine-Clark Company, Chicago.
Wm. Mueller, Jr., Wm. Mueller Company, Chicago.
W. P. Bowring, C. H. Worcester Company, Chicago.
T. P. Bradley, Duluth Log Company, Duluth.
L. R. Martin, L. R. Martin, Duluth.
Geo. Martin, Martin Bros., Duluth.
W. C. Church, W. C. Church Lumber and Coal Company, Des Moines, Ia.
A. D. MacIntyre, Pittsburg and Lake Superior Iron Company. Duluth.
M. O. Nelson, secretary, Minneapolis.

CONCRETE MANHOLES.

(*Continued from page 35.*)

distance trunk cables a manhole of extra large size is built. These large manholes are designed especially to receive the Pupin loading coil pots. These manholes are finished inside with a layer of mortar of one part of cement to three parts of good



Outline of Concrete Manhole, Showing Method of Constructing Mould of Planks.

clean sharp sand. The layer is about three-eighths of an inch thick. As a rule the manholes are oval in shape, so as to reinforce the sides and ends by lateral compression. So far it has not been found necessary to introduce steel reinforcement in the construction, but it seems that a few rods, which are cheap, might be found of advantage in holding the corners in place, to keep them from being torn off during wash-outs due to the settling of the earth around them, as has happened in numerous instances.

While concrete manholes seem to be very appropriate for cross-country work, it is not safe to say that they will do for city work, since they are monolithic in construction, and when once built are hard to drill through should it become necessary at any time to add a duct, as is happening every day in a growing plant. For this reason it is hardly likely that they will displace the familiar oval or octagonal brick manholes now commonly used in cities.

VERMONT AND NEW HAMPSHIRE INDEPENDENTS HOLD ANNUAL CONVENTION.

MEMBERS of the Vermont and New Hampshire Independent Telephone Association held their fourth convention on January 8th at Bradford, Vt.

When President H. W. Buchanan called the convention to order there were about 75 people present, representatives of the 33 companies in the association, with their wives, representatives of various supply houses and others. G. W. Buzzell, of St. Johnsbury, the secretary, read a report which covered a great deal of matter of general interest to Independent companies, dealing with growth, construction and litigation. He urged the use of the Shield, urging all members and all interested in Independent lines to stand together against the encroachment of monopoly and for the rights and interests of the people.

"We have shown the people and legislature of this State," he said, "that we are a power and that we are united to protect ourselves and the people from the unjust iron rule of the Bell Telephone Company. Our association has been the means of making some laws for our protection and there will be more made as we need them, and every Independent company in Vermont and New Hampshire should belong to this association for its own protection and the protection of its patrons."

The following resolution offered by him was adopted:

Resolved, that we, the Independent non-Bell telephone companies, constituting the Vermont and New Hampshire Independent Telephone Association, do rejoice at the success of the Metropolitan Independent Telephone Company of Boston in securing a franchise of that city against the wishes of the great monopoly, the Bell Telephone Company, and their sympathizers, and we further extend our sympathy to the men behind the guns in this great fight for their rights. When Boston and the other large cities in which franchises have been granted to Independent telephone companies are installed we will be glad again. That is what we are waiting for in Vermont and New Hampshire, 30,000 'phones strong, and further we offer our services in any way that may be beneficial to the Independent movement in Boston or elsewhere.

The officers elected were:

President, H. W. Buchanan, Barton Landing, Vt.; vice president, O. D. Eastman, Woodsville, N. H.; secretary and treasurer, G. W. Buzzell, St. Johnsbury; executive committee, H. W. Buchanan, G. W. Buzzell, O. D. Eastman, Woodsville, N. H.; Fred C. Gleason, Warren, N. H.; D. L. McGuire, Albany, Vt.

A resolution was adopted thanking the officers for their work in securing legislation.

Several interesting speeches were made at the afternoon meeting, among those who addressed the representatives being F. E. Ebersole, manager of the Northeastern Company at Portland, Me., who told of the growth of the Independent movement in that State and of its beginning in the West; W. E. Kinsman, manager of the Heath Company of Shelburne Falls, Mass., which is extending into Vermont; W. H. Johnson, of Laconia, N. H., manager of the People's Company; W. A. Perkins, manager of the Strafford Co-operative Company; C. A. Washburn and C. C. Speare, of the Orange County Company; J. W. English, of the Hartland Company and representatives of some electrical houses. The speakers all told of the success and steady growth of the Independent movement in their respective territories.

A banquet was served in the evening. Fred C. Gleason, of Warren, N. H., one of the executive committee, was toastmaster, and the speakers were: H. L. Moore, Barton Landing; J. B. Peckett, Bradford; Captain Lucas, Lake Morey; A. L. Speare, West Corinth; W. E. Kinsmore, Heath, Mass.; L. G. Lyman, White River Junction; C. M. Libby, South Rygate; F. C. Whitman, Boston; C. D. French, Canaan; G. B. Shaw, Exeter, N. H.; C. A. G. Jackson, Boston *Herald;* S. Gordon, Ashland, N. H.; F. C. Redfield, Nashua, N. H.; J. C. Blood, Norwich; W. E. Smith, Colbrook; W. J. Griffith, New York; E. D. Gilson, East Burke; G. W. Buzzell, St. Johnsbury; Fred Bowker and the Rev. Henry Kilburn, Bradford; W. A. Peterson, Boston; W. A. Barber, Heath, Mass.; A. D. Richmond, Boston; D. L. McGuire, Albany; W. B. Johnson, Laconia, N. H.; E. B. Seelye, Boston.

The members present at the meeting represented a business which is steadily being extended. They cover a territory reaching

(*Continued on page 42.*)

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QUERIES

MEASURING BRIDGING LINE.—(816.)

I have an Illinois Direct Reading Ohmmeter that I am unable to operate on bridging farm lines. It reads from 0 to 10,000 and it is all right on a straight bridging circuit, such as a toll line, but on a divided bridging line with spurs running off of the main line I am unable to understand how to figure it out. Now, for instance, I connect it to the line at switchboard terminal; there are twenty miles of No. 14 iron wire with twenty-eight telephones bridged to it, 2,000 ohm ringers, and I get a reading of 240 ohms. This I don't understand. What should I figure in reference to the telephones? A little information will greatly oblige,

W. P. J., Nebraska.

In endeavoring to test for the resistance of the above line you have evidently overlooked the shunt effect of your twenty-eight 2,000-ohm ringer coils across it. So, before taking up the case in point, we will figure a few simple shunts. In the upper part of Fig. 816-*a* we had four wires, *A*, *A*, *X*, *X*. From *A* to *B* they measure 100 ohms each. From *X* to *Z* they measure 200 ohms each. Connect the two *A B* lines, as shown at *C D*, and we have a resistance of but 50 ohms. Connect the two *X Z* lines, as shown at *E F*, and we have a resistance of but 100 ohms. Then, if we connect the two pairs of wires as shown at *G H*, we will have a resistance of 33 1-3 ohms. These results are obtained by dividing the product of the two resistances by their sum, as is shown by the following:

$$100\omega + 100\omega = 200\omega$$
$$100\omega \times 100\omega = 10{,}000\omega$$
$$10{,}000\omega \div 200\omega = 50\omega$$

Fig. 816-*a*.

In diagram 816-*b* we have illustrated a party line similar to the one you mention, inasmuch as it has twenty-eight stations, is twenty miles long and is built of No. 14 iron wire. We are considering this wire is measuring 57 ohms per mile. As you did not state the length of the legs, we have supposed them to be of various resistances, as you will note. The figures at the ends of the legs indicate the resistance from the main line, including the 2,000-ohm ringer.

The distance between the legs on the main line we have also assumed arbitrarily, as you did not specify them in your question. None of the other figures are exactly correct, but are accurate within 1 per cent. We make this allowance so as to be able to drop the fractions.

No. of leg.	Res. in ohms.	No. of leg.	Res. in ohms.	No. of leg.	Res. in ohms.
1	2279	10	362	20	269
2	1234	11	346	21	263
3	894	12	333	22	258
4	707	13	322	23	254
5	527	14	311	24	250
6	474	15	301	25	247
7	434	16	293	26	244
8	403	17	287	27	242
9	377	18	281	28	240
		19	275		

Table 816-*c*.

If the line is open between No. 1 and No. 2 you can readily see that the resistance would be 2,279 ohms. If open between No. 2 and No. 3 the resistance would be 1,234 ohms. These results are obtained by application of the formula for shunts previously explained. The leg No. 1 having a resistance of 2,114 ohms shunted by the line and leg No. 2 having a resistance of 2,164 ohms would give you a resistance of 1,069 ohms if you were measuring across the juncture of leg No. 1 and main line. This resistance added to the line resistance between exchange and leg No. 1 gives you the above resistance of 1,234 ohms. You arrive at the resistance of an open between each set of legs by using the above system and stepping up for each leg. The entire line being figured out completely in Table No. 816-*c*. You will note by this table that with all of the telephones on the line the resistance that would show on your ohmmeter would be 240 ohms, which is the reading you now obtain.

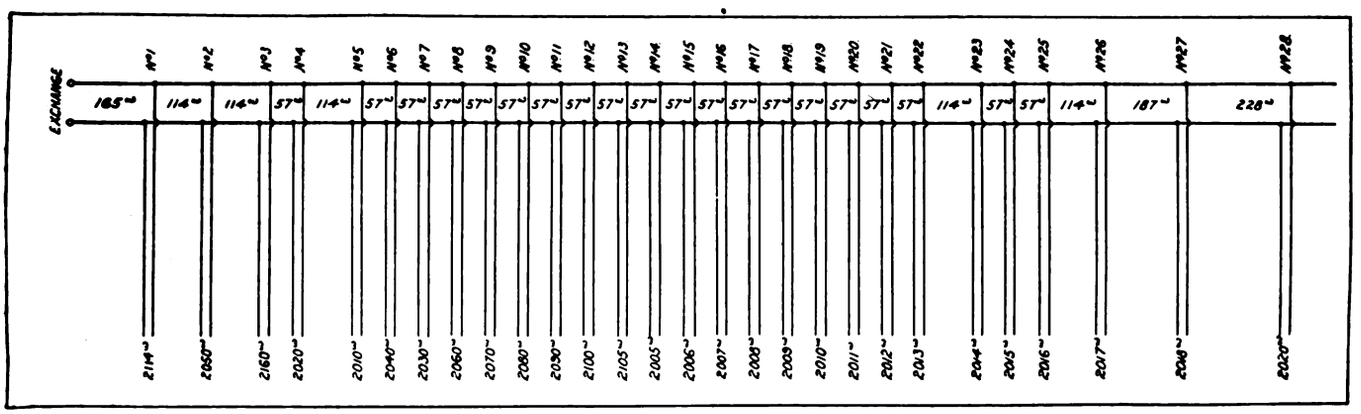

Fig. 816-*b*.

For locating a short circuit the same method of calculation would obtain. As an example we will suppose the line to be short circuited half way between the legs No. 3 and No. 4. The resistance of this short circuit from leg No. 3 would be 28½ ohms. The resistance from leg No. 1 to leg No. 3 is 729 ohms. Therefore a reading at junction of No. 1 and the main line would be 27½ ohms, which added to the line resistance of 165 ohms, will give the resistance of 192 ohms.

If you are unable to calculate your lines from the above explanation kindly write to us again, enclosing a diagram giving all linear measurements and we shall be pleased to give you correct figures.

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THE EDITOR'S PAGE

THE EXCUSE OF THE KNOCKER.

SAID a telephone subscriber one day, "These men your company sends around to fix my telephone are the worst knockers I ever saw. The thing hasn't been working for a week, and three different men have been coming in here. The first one looked wise, and said the man who put it in didn't know his business. The second said there was nothing the matter until Jones came and made the connections wrong; and the last one said the man before him was a fool. But it isn't working yet. Now, why don't you fire some of those fellows and get some men that know what a telephone needs when it's out of order?" That subscriber was about ready to throw up his contract and go over to the competing company for service. What he said is a good pointer for any telephone man. The worst of it is that there are so many who need it, and need to have it driven home so hard that it will stick.

Telephone subscribers are notorious complainers. They find fault with the loss of a few seconds. The value of time seems to be multiplied by a tremendous coefficient when a man is waiting to have a connection completed. Once a man is educated to receive an answer in ten seconds he becomes as accurate as a stop watch. He is sure that what he is paying for is ten second service every time he takes the receiver off the hook.

If he doesn't get it he can't be happy. If anything goes wrong the company is to blame, either for a deliberate attempt to cheat him, or at the least for a consistently poor management. This impression creates itself so easily, and is so hard to eradicate that any statement from a representative of the company which tends to confirm it, no matter how absurd, is immediately seized upon as a most damning truth.

Personal interest in the efficiency with which the company's plant is kept up is a good thing for every employee to feel. It is a good thing for each man to know not only what is the matter with an instrument when he inspects it, but just how the fault results from poor workmanship. It is right for him to make his report out with sufficient accuracy to show both of these things. Then if the man who came before him has been careless, or slipshod, or ignorant, it is a poor chief who cannot find it out very readily; and it is an inefficient chief who will not see that pains are taken to overcome the cause of the inefficiency in the man responsible. It is always to be borne in mind that it is the chief who should know the cause of trouble and not the subscriber.

The thing which is important is not to make the condition known, but to remedy it, and the remedy lies alone in the hands of the chief and the man who is at fault. As for the subscriber, the more he knows about the failings of the company's men, the less he likes the company. He even loses his respect for all its men, and the inspector who visits the station becomes less and less sure of a cordial reception. He is known as a member of an undesirable class, a group of inefficient workmen. So it is that relations between a telephone company and its subscribers may become more or less strained through the indiscretion of its trouble men. They forget their fault-clearing function in its proper sense to become mere breeders of trouble that they can never remove.

When this is once realized by a trouble man he is seldom likely to repeat the indiscretion. He soon realizes that he can better turn his words to account in advertising the good points of the service. A few statements to the effect that the company freely devotes its best energies to the improvement of its plant and the maintenance of its service on a high plane of efficiency can be made by him just as easily, and with just as much truth; and he then becomes a representative that it is worth while to send out. Such a man will become known in a way that brings his name to mind when some one is to be selected for a better place. He will have the approval of his associates, his superiors and the subscribers he has met. He will have acquired the spirit of co-operation which makes him in every way a contributor to the success of the interests he serves, and this is the spirit which makes his own work easy to perform and gives it a high value.

ACCOUNTING AND THE SUBORDINATE EMPLOYEE.

COMPARING jobs, the average lineman usually does not find it very difficult to persuade himself that his position in the company is rather more satisfactory than the one occupied by the bookkeeper. Of course, it keeps him out of doors and gives him exercise that holds him in a condition of physical fitness that is probably surpassed by no class of men, with the possible exception of professional baseball players. When he goes home at night he is ready to eat a meal that would do for four bookkeepers, and enjoy every bit of it. This is an advantage which should not be despised, but is one which can usually be offset by the bookkeeper who thinks it worth while. The main reason for any feeling of personal satisfaction derived from the comparison may usually be traced to the lineman's belief that he is in a real sense a producer. He takes the raw material from stock and puts it where it can be made productive. Poles and tenpin arms lying in the yard are no more than so much dead wood. Let the men get together and set them up and put on the insulators and string the wires, however, and they immediately become productive instruments of civilization of the most valuable kind. The lineman can see that he has built something which is an aid to social development and helps business. This is so obvious that it must appeal to any man who thinks about his work, and takes a pride in it, and it gives him a certain amount of satisfaction. When he considers the matter in the light of its relation to his position in a working organization, and the way it may lead to his advancement, however, he should see that the mere accomplishment is not all. He must put himself in the place of those who look upon a telephone company as a business organization, and consider the costs of the various classes of work he does. Here is where he needs information—the kind of knowledge that the bookkeeper may so easily acquire.

The making out of reports seems to be the hardest work that falls to the lot of the construction man. The main reason for this is likely to be that he does not understand their significance, and does not know why they must be made out in the established forms. A request from the auditor for further information on a voucher made to enable that officer to properly distribute expenses on his books is too likely to be looked upon as an affront, or as a demand for useless work. This causes a mild form of friction, which hinders the proper working of the company. On account of these things it would seem to be desirable for managers to take pains to instruct employees in construction and maintenance departments in the mysteries of bookkeeping to a greater extent than is commonly practised. Once the men realize how the various reports they make fit into the general scheme of conducting a telephone business for profit, their interest in securing correct results is shown in their work. They then are in a position to feel that they are co-operating with the management. From watching costs in detail, as they are classified, they gradually get to know them in a way which causes them to attempt to make reductions, thus increasing their efficiency.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

CROSSING CONTRACT WITH RAILROAD COMPANY.

I enclose copy of a contract from a railroad company for your perusal, and wish you to give me an opinion as to what the railroad company could do if we refuse to sign it. Also what would or might be the outcome if we should sign the agreement. We cross the railroad track at several points now and will probably cross several times more. Can the company prevent us from crossing? G. W.

EDITOR'S NOTE:—The agreement which accompanied the above letter recited that the railroad company granted "license and permission" to the telephone company to extend its wires across the right of way, railroad tracks and telegraph lines of the railroad company under a certain bridge, upon a number of conditions, among which were provisions for the kind of poles, their height above the rails, kind of cross arms and guard wires, distance of poles from the tracks, etc. It was also provided in the contract that the poles and wires should be moved or changed as the railway company desired, at any time, but at the expense of the railroad company. The license granted by the railroad company was to be revocable at any time on thirty days' notice, and if the telephone company did not remove its poles and wires in accordance with such notice, the railway company was to have the right to remove them forthwith, without being liable for any damages to the telephone company, which was to bear all the expense of removing said poles and wires. The telephone company was to save and keep harmless the railway company from all claims for damages resulting from injuries suffered by the railway company, its agents, employees, servants or third persons, either in person or in property, resulting from anything done or omitted to be done by the telephone company in the construction, maintenance, use or operation of its property. The telephone company was to agree to remove its property from the right of way upon the termination of the license, and in a peaceful manner.

THE statutes of Arkansas, in which state the above-mentioned telephone company is located, provide (Digest of Statutes of 1904, Ch. 58, Sub. IV., Section 2934) that telephone companies may construct, operate and maintain lines along and over lands of private individuals, and upon, along and parallel to any of the railroads of the state, and on and over bridges, trestles and structures of such railroads, provided ordinary use is not obstructed, and just damages are paid to the owners of such railroads. By Section 2935, it is provided that if a telephone company fails to get consent of the railroad company, it may condemn such right of way as it needs over the railroad company's property. Section 2936 gives the telephone company the right, by its agents, to peacefully enter upon the right of way of any railroad company and survey, locate and lay out its lines subject to any damages that may result.

You will notice from the above citations from the laws of the state that your company does not need to sign the contract proposed by the railway company unless it so wishes. In case it does not sign, and the railroad company refuses to permit the crossings, the telephone company may, by condemnation proceedings, force the railway company to permit a crossing. Under such circumstances the railway company would probably have to pay the cost of the proceedings and would not be able to dictate terms. The proceedings would, of course, take some time, and during that time the telephone company would be without its crossings. If you sign the contract, the railway company could then make you move at any time on thirty days' notice, but upon receiving such notice from the company you would be able to commence condemnation proceedings and soon compel another crossing, although, of course, your service would be impeded in the meantime. If, after consideration of the above suggestions, you decide to sign the contract, you might suggest to the railway company that, before you execute it, you wish the contract modified so as to provide sixty days' notice for termination, and that it also be modified so as to make your company agree to save and keep harmless the railway company from only such "claims and demands for damages resulting from injuries which result from anything *negligently* done or anything *negligently* omitted to be done" by you. Under the contract as it now stands, it might be asserted that the telephone company was liable for its acts whether negligent or not, and by inserting the words "negligently" as italicized above any such interpretation would be guarded against.

LICENSE TAX ON PAY STATIONS IN LOUISVILLE, KY.

ANOTHER legal fight between the city of Louisville, Ky., and the Cumberland Telephone Company will be precipitated by the signing of the new license ordinance by the Mayor. There is a section in it which provides that a license tax shall be placed on all pay stations of telephone companies, the exception in favor of the Cumberland contained in the words, "except those companies now paying a franchise tax" having been very properly stricken out by the Aldermen.

As the Cumberland Telephone Company has about 300 pay stations in the city, and as a sufficiently heavy license has been fixed to minimize the profits, it is quite certain that the company will object to the payment of the license.

In the same connection druggists who are members of the Retail Druggists' Association have asked their organization to use its influence to secure the passage by the Council of an ordinance giving the Home Telephone Company the right to establish pay stations, which, according to the terms of their franchise, they expressly waived. There is doubt as to the power of the city to add that right without repealing and re-enacting the original ordinance.

NUMERALS CANNOT BE MONOPOLIZED.

AN independent telephone company may use the same numerals to designate the telephone number of its trouble clerk as are used by a Bell telephone company for the same purpose. This is a recent decision of the Supreme Court of Utah in one of the most inconsistent and uncalled for suits ever brought by the monopoly to perpetuate its control of a feature of the telephone business. The Rocky Mountain Bell Telephone Company at Salt Lake City, Utah, originally asked that an injunction be issued by the District Court restraining the Utah Independent Telephone Company from using the number "888" to indicate its trouble clerk, alleging that a diversion of business would result from the use of the same number which had been selected by the Bell company for its trouble department.

The Bell Company claimed that by reason of the same number being used, and by reason of the fact that the telephones of both companies were somewhat similar in appearance, the Independent company would receive information concerning trouble with the instruments of the Bell subscribers and would thus be enabled to send their solicitors to such subscribers and get them to subscribe for the Independent telephone service.

The Supreme Court opinion holds that deceit and fraud were not practiced by the Independent company in selecting a number for the trouble department identical with that used by the Bell Company for the same department, and that the Bell Company has no cause of action.

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IN THE OPERATING FIELD

VERMONT AND NEW HAMPSHIRE CONVENTION.

(*Continued from page 38.*)

from Penacook, N. H., into Canada, and back to Berlin, N. H., and from White River Junction to Wells River, taking in a large part of the eastern section of the State of Vermont.

Attempts which were made by the association to secure favorable legislation at the recent session of the Vermont General Assembly resulted in the passage of an act providing that:

"Every railroad corporation doing business in this State shall grant to every person, firm, joint stock company or corporation operating a public telephone line in this State equal and reasonable terms, arrangements and facilities for the installation of telephone instruments on the lines or connected with the telephone system of such person, firm, joint stock company or corporation, in all depots, station houses or offices of such railroad corporation in the State of Vermont."

This was aimed at the Boston & Maine Railroad, which has an exclusive contract for the placing of telephone instruments and booths in the stations of that company. The Independent companies, which have about 8,000 subscribers along the line of the Boston & Maine, had been refused permission last October to place instruments in these stations, the reason alleged being the existence of the contract and the belief of the management that better public service would be given by a contract with one company alone. Since the passage of that act negotiations have been renewed and the company has expressed its willingness to allow the installation of instruments, and only the details remain to be arranged.

Plans for future advances were discussed, and all present expressed their enthusiasm at the outlook for the coming year.

MISSOURI LEGISLATURE TO CONSIDER ACT REQUIRING INTERCONNECTION BETWEEN TELEPHONE COMPANIES.

IN the General Assembly of the State of Missouri there has been introduced an act requiring that where two or more telephone companies maintain exchanges in the same city, town or village, it shall be the duty of such companies to provide means whereby subscribers for the service of one company may have communication with persons on the lines of the other company or companies. The bill provides that the fee for such connection shall not exceed three cents for each call, and that connections between exchanges of companies operating separate systems in the same city, village or town, shall be established not later than December 1, 1907.

PENNSYLVANIA TO HAVE A NEW CHAIN OF MODERN INDEPENDENT TELEPHONE EXCHANGES.

IN Beaver County, Pa., there is a locality known as Beaver Valley, in which are located some fifteen or twenty cities and towns which form practically the only important district in Pennsylvania which is not now supplied with Independent telephone service. Among these towns may be mentioned Beaver, the county seat; Rochester, New Brighton, Beaver Falls, Monaca and Ambridge, with a number of smaller towns, all within a half hour's ride of Pittsburgh. As Pittsburgh has excellent Independent service, the absence of connection with that city over such lines has been a source of inconvenience to many of the residents of these towns.

Although various attempts have been made to procure Independent franchises, they were unsuccessful until the arrival of Mr. S. C. Thayer, who had made a successful record in developing and managing an Independent company in Newton Falls, O., and as organizer and later president and general manager of the Columbiana County Telephone Company, at Salem, O. After twenty months of activity, with the assistance of many people anxious to secure the benefits of Independent telephone service, he has secured franchises in all important Beaver Valley towns excepting Rochester, and this place is soon expected to fall in line. A feature which at present is greatly in favor of an Independent company is the fact that the Bell company is now giving magneto service with rates as follows: Business desk sets, $76; business wall sets, $60; residence, $51. Independent rates will be much lower.

At Beaver Falls, the largest town in the valley, the underground work is now completed, and it is being rapidly pushed in other towns. Modern buildings will be erected, and first-class equipment installed. The construction of this extensive system is under the direction of Frank B. Hall. Under such management the new company believes it is assured of success from the start in the valuable field which it will develop.

GOVERNOR J. A. JOHNSON RECOMMENDS AMENDMENT OF MINNESOTA TAX LAWS FOR TELEPHONE COMPANIES.

IN his message to the Legislature of Minnesota Governor John A. Johnson called attention to the fact that under the present statute telephone companies are taxed on their gross earnings derived from business within the State, which shall be in lieu of all other taxes and assessments upon such company and its capital, and that these taxes shall be paid into the State treasury on or before January 1st in each year. He states that the one defect in this law arises from the fact that there is no penalty imposed for failure to pay these taxes, the State being required to bring suit to recover if payment is not made on demand. He recommends to the Legislature that the statute shall be amended to provide a penalty for the failure to pay taxes, in order to relieve the State of unnecessary litigation, which is now necessary, in order that it may not be deprived of the use of the money.

BOOK REVIEW.

HYDE'S TELEPHONE TROUBLES AND HOW TO FIND THEM, by W. H. Hyde; 56 pages and numerous illustrations. Published by W. H. Hyde & Company, Milwaukee, Wis. Price 25 cents.

This is the twelfth edition of this well known book, which is intended to give a list of the most common troubles affecting magneto and central energy systems. Much new material has been added, with the object of bringing it up to date, and strengthening the information contained in previous editions. The field covered embraces not only switchboard troubles, but the clearing of troubles on four party selective lines and various parts of the sub-station set. Directions for the installation of rural lines, ground wires, lightning arresters, etc., are also given. The book is illustrated with a number of appropriate diagrams, and contains tables of information useful to practical telephone men.

CUMBERLAND COMPANY TO BE REQUIRED TO PAY $50,000 FOR CONTRACT WITH MEMPHIS, TENN.

THE lower board of the legislative council at Memphis, Tenn., is threatening the Cumberland Telephone and Telegraph Company with the passage of a resolution providing that in addition to the recommendation of the upper board, the company be required to pay into the city treasury the sum of at least $50,000 before a contract is entered into between it and the city.

For some time there has been a controversy between the city and the Cumberland company, the contention on the part of the city being that the telephone company is operating here without a contract of any character. Several meetings

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have been held at which the matter has been gone over. Finally the committee of the upper board filed a report directing that the contract be signed, provided the company would make the same rates as are charged by the Memphis company for business telephones, and provided further that citizens be given a better service.

ENJOYABLE FEATURES OF STOCKHOLDERS' MEETING AT NEW PHILADELPHIA, O.

STOCKHOLDERS of the Tuscarawas County Telephone Company, of New Philadelphia, O., held their annual meeting on January 8th. An especially enjoyable feature of this gathering was the banquet which followed the business meeting. Mr. Dwight E. Sapp, of Mt. Vernon, was introduced by General Manager J. K. Johnston as toastmaster, and in his introductions of the speakers he gave a tone of cheerfulness which was characteristic of the entire meeting. Interesting and enjoyable talks were given by F. L. Beam, president of the State organization; W. F. Laubaugh, president of the Independent company of Akron; Mr. McIntyre, of Chicago; Rev. H. N. Campbell, Judge Yeagley and J. S. Brailey, Jr., of Toledo.

Various features of the organization and conduct of a successful telephone company were discussed by the speakers at the banquet, and at the conclusion General Manager Johnston and the other officers of the company received the hearty commendation of the stockholders and guests for their success in building up one of the finest telephone plants in the State. All agreed that the meeting had been most enjoyable.

At the business meeting, which had been held earlier in the day, much enthusiasm at the success of the company was expressed. The following officers were elected:

President, Chas. H. Slingluff, Dover; vice-president, J. K. Johnston; treasurer, J. L. Kennedy; secretary, E. A. Walter, all of New Philadelphia. Directors are: C. H. Slingluff, J. K. Johnston, J. L. Kennedy, E. A. Walter, E. D. Moody, Jas. S. Brailey, Jr., G. A. Beers, E. R. Van Ostran, C. D. Juvenal, J. M. Blatt, Dr. Goodrich and Andrew Deis. W. B. Gregson was re-elected auditor and ass't general manager, while J. K. Johnston was re-elected general manager.

CUMBERLAND'S APPEAL FOR LEGISLATIVE AID A JOKE.

THE Cumberland Telephone Company (Bell) has presented a memorial to the Tennessee Legislature seeking to enlist the sympathy of that body for the company in its fight with the Independent lines. The memorial has about fifteen hundred words and is signed by J. E. Caldwell, president. After a long preface, in which President Caldwell tells of what the Cumberland has done for the public and of the "speculators," as he terms them, organizing opposition companies to invade a territory developed by his company, he takes up the company's private affairs and explains its growth in the past fifteen years, showing that its capital stock has been increased from a little over one million ten years ago to something over twenty millions at present. He then tells of the advance in price of all materials used by the company in construction and maintenance.

In a pathetic appeal Mr. Caldwell tells how "Speculators," referring to the Independent companies, now attempt to induce the Legislature at every session to pass laws adverse to the interests of his company. In lieu of such legislation, Mr. Caldwell contends, the Legislature of Tennessee should pass a law creating a public tribunal before which all matters concerning rates, service, competition, etc., of the telephone companies or against them should be taken. This tribunal, he says, should have authority to investigate every character of complaint and decide on its merits, placing the courts where, when final trial comes, they can get the information necessary to enable them to decide on the equity of contentions. The unusual nature of the memorial created some talk when read, but the Cumberland has had so many tribulations before the courts and public in Tennessee that the Legislature did not take the matter seriously. Thus far no member of the Tennessee Legislature has offered a bill providing for the tribunal asked for.

"TO THE EDITOR"—

It is a regrettable fact that sometimes some subscribers to AMERICAN TELEPHONE JOURNAL discontinue their subscriptions. In every instance, with scarcely a variation, the subscriber's having chosen another walk in life is the reason given. Naturally the Editor cannot expect AMERICAN TELEPHONE JOURNAL to interest and be of value to any but telephone men.

The letter quoted below is an instance and is written in a very happy vein:

THE LINCOLN AVENUE POULTRY YARDS
CARL C. CURTIS, OWNER
SUCCESSORS TO
CAPT. R. PRYCE MITCHELL
SANTA BARBARA, CAL.

STANDARD BRED S. C.
WHITE LEGHORNS, EXCLUSIVELY

PASADENA, Cal., January 5, 1907.

AMERICAN TELEPHONE JOURNAL,
New York.

Gentlemen:

Judging from the status quo as regards myself as indicated by the above letter-head, do you honestly believe that your excellent journal can be of the slightest assistance to me in promoting the welfare of the domestic hen? Since embarking upon this enterprise as a relief from the trials and tribulations, the gray hairs and wrinkles, the sour and morose disposition, and the generally friendless and cheerless life of the follower of telephony, I have patiently searched your columns for enlightenment as to why a hen persistently does the identical thing you do not want her to do, without relief. Also you are silent upon the question of the hour, namely: how to make hens lay when eggs are sixty cents per dozen. Gentlemen, you see my position.

The time was when *your paper was of the greatest use to me and its coming was eagerly watched for*, but I am trying to get next to Nature now, and you are too far away. Should the "Divinity that shapes our ends" again order me back to the fire for another singeing, I will call on you for help, but till then please discontinue your reminder of other days.

Yours very truly,
CARL C. CURTIS.

Mr. Curtis apparently has "stepped out of the frying pan into the fire" from the troubles he is having with his hens. And he has the Editor's sympathy. But the Editor sincerely appreciates the very pleasant things Mr. Curtis has to say for AMERICAN TELEPHONE JOURNAL.

BUSINESS MEN OF NORWICH, N.Y., CUT OUT BELL TELEPHONES.

EIGHTY-FIVE of the business establishments in the village of Norwich, N. Y., have entered into an agreement to discontinue the use of Bell telephones. It is expected that by the end of this week practically every business house in the village will be using only Independent telephones, as the number who have not signed the agreement is very small. With the discontinuance of the service by business men, it is natural that the value of residence service will be much reduced, so the Bell company will have little business in the town. At the meeting at which this action was taken, after a careful consideration of the subject, it was agreed that the Marquis Telephone Line (Independent) controlled by J. B. Marquis, Jr., not only gives them equally good service at a less cost but that they can reach a larger proportion of their customers over the Marquis lines than over those of the Bell company. The Independent company is already making arrangements to increase its equipment to handle the additional business which it expects.

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TELEPHONE PATENTS

COMBINED RECEIVER AND INDUCTION COIL.

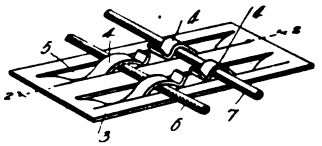
David H. Wilson, Chicago, Ill., patents (No. 836,848; dated November 27, 1906; filed December 8, 1902; serial No. 134,261) and assigns to George W. Kretzinger, Chicago, Ill., a combined receiver and induction coil.

The receiver pole pieces are secured to the poles of a specially designed induction coil. The ear piece is attached to the main portion of the receiving instrument by a rubber tube. An auxiliary device consists of a circuit breaker which may be actuated by the induction coil magnet on the closure of a special ringing key, so that a subscriber may ring from local battery, the interrupted current being stepped up to the required voltage in the induction coil.

TEST CONNECTOR.

Aubrey Wardman, Whittier, California, patents (No. 839,346; dated December 25, 1906; filed December 18, 1905; serial No. 292,350) a test connector.

From a plate of resilient conductive material are stamped



spring tongues 4, which are left secured to the plate at its opposite ends, but have the free ends which project toward each other bent in the manner indicated in the drawing to form a wire receiving section.

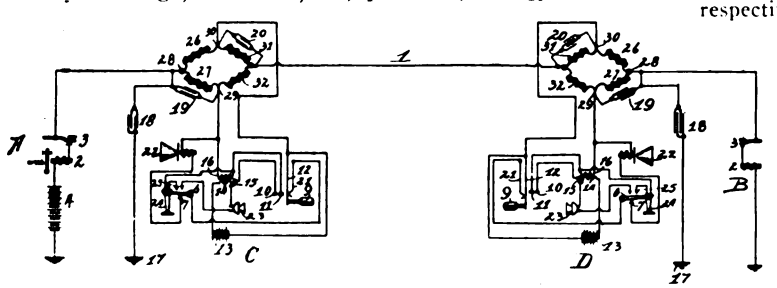
PLAN FOR OVERCOMING INDUCTION.

Isidor Kitsee, Philadelphia, Pa., patents (No. 838,788; dated December 18, 1906; filed August 11, 1906; serial No. 330,201) an improvement in the electric transmission of intelligence.

The object of this invention is to provide means to counteract the inducing effect of high potential lines upon telephone wires. To accomplish this the inventor encloses each power wire with a coil connected to a second coil embracing a group of telephone wires. These coils are intended to be so proportioned and connected as to receive from the power line and impart to the telephone line, by induction, electrical impulses equal and opposite to those induced by the action of the power lines through the air.

COMPOSITE SYSTEM.

Harry O. Rugh, Sandwich, Ill., patents (No. 839,210; dated



December 25, 1906; filed October 20, 1906; serial No. 339,832) a composite system.

Transmission line 1 extends between telegraph stations *A B* and telephone stations *C D*. The circuit for talking currents and for the telephonic signalling currents, when it originates at station *C*, may be traced from ground 17, through condenser 18, condenser 19, coil 16, and condenser 20 out to the transmission line. By the use of impedance coils 26, 27, 31, 32, connected in the quadrilateral form shown in the diagram, the telephone apparatus is guarded from the action of telegraphic currents while the shunting of opposite sides of the quadrilateral 27 31 by condensers 19 20 permits the passage of telephone current to the line.

TELEPHONE SIGNALLING SYSTEM.

John Z. Miller, Erie, Pa., patents (No. 830,161; dated September 4, 1906; filed October 30, 1902; serial No. 129,484), a selective calling mechanism for a two-party magneto line.

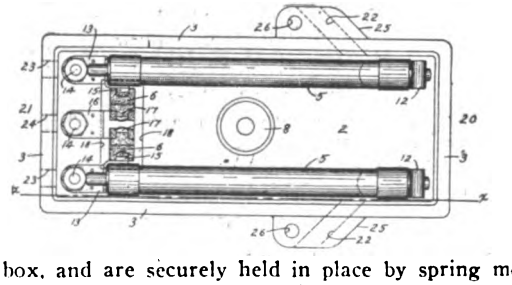
At the first station is provided a bridged bell connected in series with a 2,000-ohm impedance coil. At the other station the bell is legged to ground from a point between two impedance coils bridged across the line. The first bell is intended to be rung by alternating current conveyed in the usual way over a metallic line circuit. For ringing the second bell the operator at the exchange throws a special key, which connects one side of her generator to both sides of the metallic circuit, and the other side to ground, thus ringing the bell over the ground return.

When a call is sent in to the central office by one telephone the ringer of the other instrument is not affected; as in one case the calling current passing over the metallic circuit cannot affect the grounded ringer, while in the other the resistance of the impedance coil in series with the telephone ringer is much greater than that of the drop.

SUBSTATION PROTECTOR.

Frank B. Cook, Chicago, Ill., patents (No. 839,117, dated December 25, 1906; filed July 30, 1906; serial No. 328,424) a substation protector.

This protector is intended for outside use at substations. The casing 1 is constructed with a flat base portion 2 and raised side portions, 3, 3, which form a box deep enough to hold the necessary enclosed fuses and lightning arresters. Between the open surface of sides 3 3 and the metallic cover which is furnished with the box is laid a rubber gasket, in order to make a tight joint. The cover is secured in place by a bolt passing through a hole in the center of the raised post, 8, set in the middle of the box. In the cover a depression is provided to receive the head of the bolt so that by having the bolt head no higher than the flat portion of the cover, packing may be made convenient. The enclosed fuses 5 and lightning arrester 6 are set in planes lying respectively parallel with and at right angles to the plane of the



base of the box, and are securely held in place by spring members clamped to the base by bolts. Side lugs 25, 25 with holes 26, 26 are utilized to hold the protector in place with the end 20 at the top. Passages 22, 22 are for line wires, 23, 23 for instrument wires and 24 for ground wire.

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GRAY PAY STATIONS PAY

BECAUSE NO ATTENTION IS REQUIRED AFTER INSTALLED

You are instructed not to shout in a telephone, as you can hear better by talking in a natural, distinct voice.

The same rule applies to our perfect system of signals—they are clear and distinct to the operator and not confusing like lever blows of hammers.

GRAY TEL. PAY STATION CO. HARTFORD, CONN.

FOR SALE

For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

FOR SALE—1,000 Kellogg magneto telephones; Viaduct Mfg. Co. ringers; Wabash Cabinet Company's back boards and battery boxes. Good condition, almost new. Will sell singly or in lots. For particulars, write Kinloch Telephone Company, C. W. Shands, Purchasing Agent, St. Louis, Missouri. 755

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WANTED—Position as superintendent or foreman of outside construction with contractor or operating company. Twelve years' experience, principally cable construction. First-class cable splicer. Address Box 754, care THE AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 754

WANTED—Position as manager by married man. Seven years' experience, 5 years in common battery work. Independent preferred. South. Address W. C. Anderson, No. 1016 North Second avenue, Nashville, Tenn. 760

WANTED---Continued

POSITION wanted by all-around telephone man. Capable man on line and instrument, also on switchboard work and taking charge of construction. Address A. D. Leonard, 2121 Lakeside avenue, N. E., Cleveland, Ohio. 756

POSITION WANTED—Practical telephone man with five years experience wants position as manager of good Independent concern. 27 years old; married; best of references. Willing to invest money with good Independent company. Will handle any system up to 800 subscribers. Address Box 757, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 757

WANTED by Bell Telephone Company, operating 100,000 stations, competent District Managers and experienced maintenance men. Unusual prospects for new men owing to changes in organization. Address Box 758, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 758

WANTED—At once three honest, sober, industrious young men who have some knowledge of magneto switchboards, as well as line work, to take charge of small exchange. State experience and salary expected. No drinker need apply. Address Box 759, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. Southern, Box 166, Leesville, La. 759

OKONITE

TRADE MARK
REG. U.S. PATENT OFFICE.

1889—Paris Exposition Medal for Rubber Insulation 1893—World's Fair Medal for Rubber Insulation

Tho Standard for Rubbor Insulation

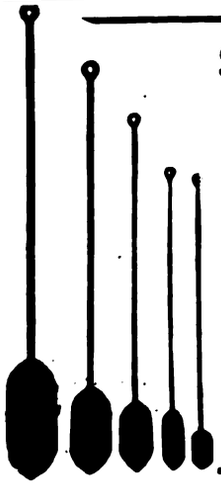
Okonite Wires, Okonite Tape, Manson Tape, Candee Weather-Proof Wire

THE OKONITE CO., Ltd., 253 Broadway, New York

Sole Manufacturers

WILLARD L. CANDEE, H. DURANT CHEEVER, } Managers

GEO. S. MANSON, Superintendent
W. H. HODGINS, Secretary



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PASS UP

These "*Procrastinatious*" Habits
TO-MORROW, TO-DAY will be
YESTERDAY

DO IT NOW!

Send us a Trial Order for One Dozen
Hercules Malleable Iron Anchors
We Will Prepay Freight. If Not Satisfactory, RETURN AT OUR EXPENSE

The W. G. Nagel Electric Co.
630 ST. CLAIR STREET TOLEDO, OHIO

SUBSCRIBER'S LEASE AND TOLL LEDGERS

Write To-Day For Samples and Prices. Toll Bills. Rental Bills

Form G-90. For Small or Branch Exchange use; carries account for 2 years.
Form G-90-A. For Large and Medium City Exchanges and Systems of Exchanges; the most complete form made.
Form G-90-B. For City Exchanges having many Rural Lines.
Form G-90-C. For City Exchanges, Rentals and Toll Charges separated.
Form G-90-E. For Small Exchanges, Rentals only.
Form G-90-F. For Small Exchanges, Tolls only.
Form G-90-G. One subscriber to a sheet; carries account 4 years.
Form G-90-H. One subscriber to a sheet; carries account 12 years.
Form G-90-I. For Small Exchanges; Bound Books; carry 12 subscribers on a page for 1 year.

The Edward-Hine Co.

TELEPHONE SYSTEMATIZING DEPT.
5 and 7 PEARL STREET (EAST), GRAND RAPIDS, MICH., U. S. A.

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IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

AMERICAN ELECTRIC FUSE COMPANY LICENSED UNDER ALL STERLING ELECTRIC COMPANY'S PATENTS.

THE American Electric Fuse Company announces that it has secured from the Sterling Electric Company, of Lafayette, Indiana, a license under all the protector patents of the Sterling Electric Company, including all the protector patents involved in the litigation between the Sterling Electric Company and Frank B. Cook. It has also secured from the Sterling Electric Company a release covering all goods heretofore manufactured by the American Electric Fuse Company, which release also covers all the customers of the American Electric Fuse Company.

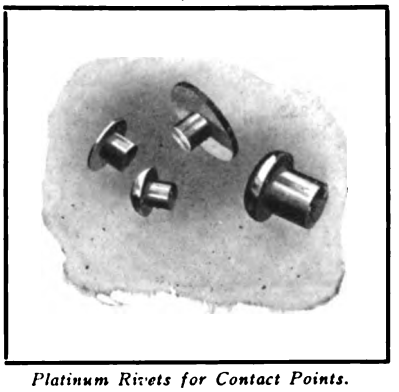
The recent decision of the United States Circuit Court of Appeals, which is the highest Court of Appeals in such cases, in favor of the Sterling Electric Company and against Frank B. Cook, therefore does not affect any customer of the American Electric Fuse Company, since all of the goods of the American Electric Fuse Company are licensed under the patents involved in that litigation.

The American Electric Fuse Company will be very glad to furnish full details concerning these patents and the decision of the United States Circuit Court and anything additional with regard to the patent situation on protectors, on request from any of its customers. This company has never been sued for infringement of any protector patent, and announces that it has been and always will be its policy to respect all the legitimate patent rights of others, and that it will guarantee protection to all of its customers against any patent suits of any kind or nature.

PLATINUM RIVETS.

ECONOMY in the use of platinum is an object much sought by telephone manufacturers.

Baker & Co., Inc., Newark, N. J., claim that their platinum rivets are made in such a form that their use for contact points makes it possible to effect a saving. By the time they are in place the cost of points made from these rivets is said to be lower than when wire is cut, finished and in place. This saving comes from the fact that with the rivets it is necessary to do no cutting of material to fit the contact point into the recess provided for it, and that the cost of labor in setting the points may be made very low.



Platinum Rivets for Contact Points.

In the accompanying illustration is shown a group of rivets of a few of the different standard forms. The company issues a sheet showing dimensions of a great many standard sizes which it manufactures, covering a sufficient range to be adapted to practically all purposes of the manufacture of telephone apparatus. This list and full information will be sent by the company upon receipt of a request.

THE STROMBERG-CARLSON EXHIBIT AT THE CHICAGO ELECTRICAL SHOW.

DIRECTING attention to the important exhibit of the Stromberg-Carlson Telephone Manufacturing Company, of Rochester, N. Y., which is now in place at the Electrical Show at Chicago, is a novel and interesting map bordered by electric lamps. An especially attractive feature of this map is the use of many electric lamps dotted over its surface at various points, each lamp representing a city or town which contains one or more operating exchanges installed by the company. When lighted at night these lamps are visible from many parts of the floor, owing to the prominent position of the company's exhibit, and attract much favorable attention.

Exhibited by the company are several classes of its standard apparatus, including a large multiple central energy switchboard, private branch exchange switchboards of various designs and capacities, telephones for both city and country use, and various other pieces of material of types generally familiar to telephone men. The exhibit as a whole is extremely attractive. It is in charge of A. M. Haubrich, Chicago manager, and Messrs. Schafer, Stigberg, Hudson and Lewis, from the Chicago office, and Messrs. J. P. Cracraft, general sales manager, Hague and Oliver, of the Rochester office. From time to time Messrs. Nate, Myers, Shafer and Menefee, salesmen whose territories are in the vicinity of Chicago, will also be present at the company's exhibit.

THE BLAKE SIGNAL & MFG. COMPANY, 246 Summer street, Boston, Mass., issues a booklet which describes the Blake signal system for electric and steam railways. The advantages of this signaling system from an operating standpoint are referred to at some length. It is shown how the Blake system, in connection with a telephone system of despatching, enables the despatcher's office to hold communication at any desired time with any desired train crew, while the necessity of stopping and calling in from every one of a number of predetermined points is avoided. In this way the time taken for useless telephone calls is saved, with the consequent benefit of increased speed of operation. Other advantages and general operating features of the system may be learned by an examination of the book which will be sent by the company to all interested persons.

THE AUTOMATIC ELECTRIC COMPANY, Chicago, Ill., is exhibiting in spaces 19 and 20, Section C, at the Chicago Electrical Show, a working "cross-section" of a 100,000-line automatic telephone system such as it will install in Chicago for the Independent Telephone Company of Chicago, the $10,000,000 company recently formed for the purpose of operating an automatic telephone system, serving the entire city, under the franchise rights of the Illinois Tunnel Company.

The exhibit consists of two of the Automatic Electric Company's new "Keith Units" of 100 switches each, connected by a trunking section and representing a portion of each of two branch exchanges, "A" and "F."

There will be twelve telephones connected up, six on each section. The equipment will all be mounted on a raised platform at the rear of the booth, separated from the rest of the booth by heavy brass railings.

The exhibit is in charge of H. H. Woodworth, advertising manager for the company, who, together with C. L. Fisher, sales manager; J. A. Russell, R. B. Tyler, J. E. Fisher and P. J. Eubanks, of the sales department, and F. Lubberger and J. S. Engh, of the engineering department, will be in attendance during the show.

FRANK B. GRIFFIN, Oshkosh, Wis., is prepared to fill orders for silk-covered magnet wire in any quantities desired. The insulating covering is carefully wound, and the manufacturer believes that his wire will fulfill all requirements necessary to be observed in the winding of high grade apparatus. He will send full information and prices upon receipt of a request.

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COMMERCIAL

OUR TRADE MARK

COMMERCIAL ELECTRICAL SUPPLY COMPANY. HIGHEST GRADE ST. LOUIS TRADE MARK

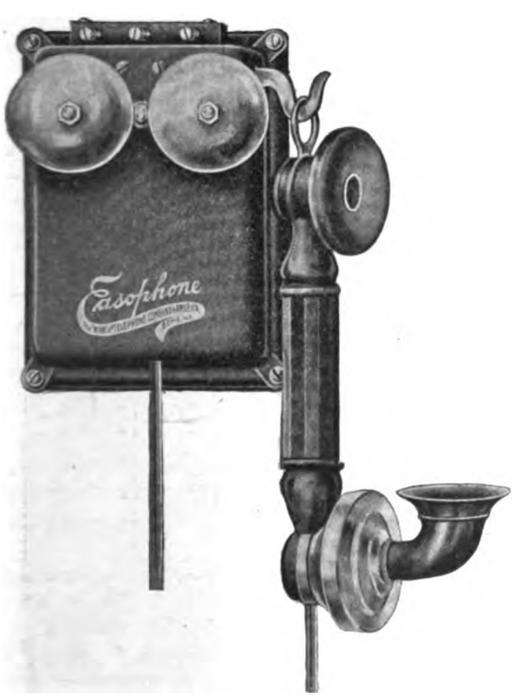
Every time you see it on correspondence on your desk it means a chance to save money.

We issue quarterly a net price list of line construction lumber, plain and galvanized hardware and telephone wires and cables. It contains up-to-date market prices and enables prospective purchasers and engineers to make estimates on new construction. Ask for it and you will be placed on our lists and receive it regularly.

Commercial Electric Supply Co.

15th STREET, ST. LOUIS, MO.

COMMERCIAL



Easophones
The WIRE and TELEPHONE COMPANY of AMERICA
ROME, N.Y.

Long Distance Hand Telephone
Long Horseshoe Magnet Receiver

SOLID BACK TRANSMITTER
NO EXPOSED CONNECTIONS
SINGLE COIL RINGER
REVERSIBLE HOOK

Visit our Exhibit Electrical Show, Chicago, January 14th to 26th
Space No. 16, Section "C"

WRITE FOR BULLETIN No. 101

THE WIRE & TELEPHONE COMPANY OF AMERICA

ROME, N. Y.

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IN THE MANUFACTURING FIELD

THE STROMBERG-CARLSON SALES ORGANIZATION'S CONFERENCE.

THE accompanying illustration was made from a photograph taken on Jan. 4th, 1907, in the Rochester, N. Y., plant of the Stromberg-Carlson Telephone Manufacturing Company. It represents in part the Sales Organization of the company.

The representatives whose portraits appear in this photograph were called together in general conference for the exchange of ideas and for planning a sales campaign for 1907. The meetings were presided over by the sales manager, Mr. J. P. Cracraft, and were held daily at 9.30 A. M. and 2.00 P. M. in the assembly hall. Evening sessions were often held. These meetings and consultations extended over a period of eight days and were eminently successful from many points of view. Members of the engineering department were prominent at these meetings. Many pieces of apparatus were brought before the meetings and thoroughly discussed. These discussions were instructive and interesting, and the exchange of ideas and the experiences of the salesmen were of much value to both the inside and outside men.

A list of the representatives present as shown above, together with their respective territories, follows:

Mr. J. P. Cracraft, sales manager.

Mr. H. A. Jones, representative from New Jersey, Delaware, District of Columbia.

Mr. T. E. Wright, Virginia, West Virginia, Maryland, Pennsylvania and New York City.

Mr. J. A. Helvin, from North Carolina, South Carolina, Florida and Georgia.

Mr. F. C. Redfield, representative from the New England States and the eastern provinces of Canada.

Mr. B. J. Mockenhaupt, from Chicago office.

Mr. C. S. Sifferd, from Kansas, Oklahoma and Indian Territory.

Mr. F. W. King, Rochester office.

Mr. J. B. Wilkinson, Kentucky, Tennessee, Mississippi and Alabama.

Mr. J. J. Nate, North Dakota, South Dakota, Minnesota and Montana.

Mr. H. C. Slemin, Rochester office.

Mr. A. J. Kennedy, New York State.

Mr. A. M. Haubrich, manager Chicago office.

Mr. B. C. Hyde, Missouri.

Mr. Wm. Bowen, Sr., Iowa.

Mr. C. W. Schafer, Rochester office.

Mr. A. B. Crawford, Ohio.

Mr. E. A. Reinke, sales department, Rochester office.

Mr. E. P. Shafer, Indiana.

Mr. J. S. Gibson, representative in Canada, with sales office and warerooms at 60-62 Front street W., Toronto, Ont., Can.

Mr. J. H. Wagner, recently in Chicago office, now located in Rochester sales department.

Mr. C. E. Hague, sales engineer at Rochester office.

Mr. S. W. Menefee, Michigan and Wisconsin.

Mr. D. C. Gould, Nebraska and Colorado.

Mr. P. D. Myers, Illinois.

Mr. C. F. Speed, New Mexico, Texas, Arkansas and Louisiana.

Mr. J. O. Oliver, advertising department.

Without exception the men returned to their respective fields of operation greatly benefited by the week's conference and with the firm determination of accomplishing even greater results than have been attained in the past.

THE W. G. NAGEL ELECTRIC COMPANY, Toledo, O., reports a large demand for the Robinson distribution rack. This is stated by its users to enable them to effect considerable economy in construction, as its sectional form enables them to add new supports as required. The company will send full information to all interested persons.

1—H. A. Jones
2—T. E. Wright.
3—J. A. Helvin.
4—F. C. Redfield.
5—B. J. Mockenhaupt.
6—C. S. Sifferd.
7—F. W. King.
8—J. B. Wilkinson.
9—J. J. Nate.
10—H. C. Slemin.
11—J. P. Cracraft, sales manager.
12—A. J. Kennedy.
13—A. M. Haubrich, Chicago manager.
14—B. C. Hyde.
15—Wm. Bowen.
16—C. W. Schafer.
17—A. B. Crawford.
18—J. L. Keenan.
19—E. A. Reinke.
20—E. P. Shafer.
21—J. S. Gibson.
22—J. H. Wagoner.
23—C. E. Hague, sales engineer.
24—S. W. Menefee.
25—D. C. Gould.
26—P. D. Myers.
27—C. F. Speed.
28—J. O. Oliver, advertising manager.

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Standard Vitrified Conduit Company

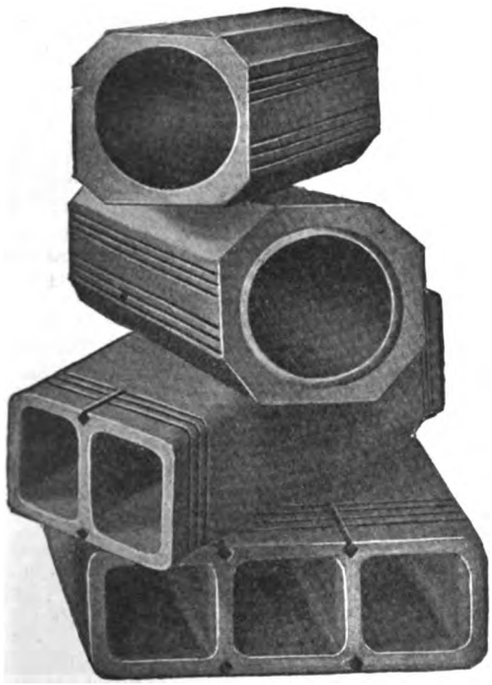
B. S. BARNARD, President.

MAIN OFFICES—39-41 CORTLANDT ST.—NEW YORK, N. Y.

MANUFACTURERS OF

MULTIPLE DUCT VITRIFIED CONDUITS

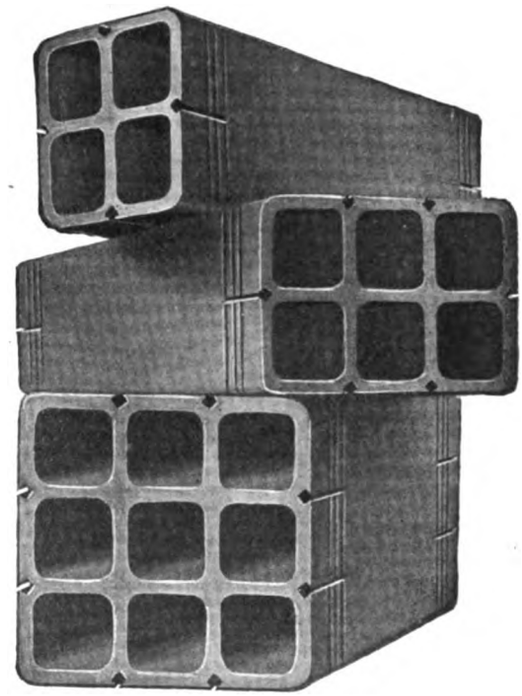
OUR FACTORIES ARE THE LARGEST IN THE WORLD
ANNUAL CAPACITY, 40,000,000 FEET OF CONDUIT



SINGLE DUCT
3¼ inch Round Bore
3½ " " "
4 " " "
3½ " Square "
3¼ " Round "
(Socket Joint)

MULTIPLE DUCT
2, 3, 4, 6 and 9 Duct
3¼ inch Square Bore
3½ " " "

MULTIPLE DUCT
2, 3, 4 or 6 Duct
3¼ inch Round Bore



OUR STANDARD MANDREL SUPPLIED FREE TO OUR CUSTOMERS

A few of the Big Contracts placed with us:

Stromberg Carlson Telephone Mfg. Co.
Niagara Falls Power Co.
Charles E. Phelps, Jr., Baltimore, Md.
New York Edison Co.
Brooklyn Edison Co.
Philadelphia Electric Co.
Norfolk Railway & Light Co.
Montreal Light, Heat & Power Co.
Bell Telephone Co., U. S. A.
Bell Telephone Co., Canada
Pennsylvania R. R. Tunnel, N. Y. City
Trolley Tunnels, N. Y. City
Rapid Transit Subway, N. Y. City

ANNUAL CAPACITY:

40,000,000 Duct Feet

WRITE FOR CATALOGUE

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THE WEEK'S MESSAGES

NEW COMPANIES.

CRESTED BUTTE, COL.—Articles of incorporation have been filed by the Crested Butte Telephone Company. It has an authorized capital stock of $10,000, and the incorporators are J. W. Rockefeller, S. G. Robinson and Angus Taylor, of Crested Butte.

DAVIS, ILL.—The People's Mutual Telephone Company, of Davis, has been incorporated with a capital stock of $10,000, divided into shares of $50 each. Among the incorporators are J. W. Johnson, William Arnsmeier and Fred Alberstett.

ROCHESTER, IND.—The Farmers' Co-operative Telephone Company has been organized to operate in Fulton, Marshall, Miami, Wabash, Kosciusko and Whitley Counties. The capital stock is placed at $10,000.

SILVER LAKE, IND.—Articles of incorporation have been filed by the Farmers' Co-operative Telephone Company, of Silver Lake. The company has a capital stock of $10,000, and the incorporators are Thomas E. Ball, James Paxton and Isaac Shoemaker.

ODEBOLT, IA.—The Eden Mutual Telephone Company has been incorporated in Eden township with a capital stock of $5,000.

NEODESHA, KAS.—The Verdigris Valley Telephone Company has recently been organized with the following officers: H. E. G. Miller, president; L. B. Hutchins, vice president; William Basore, secretary; Tom Tazen, treasurer; C. E. Kerwin, W. F. Gray and Peter Beurskin, directors.

PECK, KANS.—The Peck Mutual Telephone Company, Peck, Kans., has filed articles of incorporation.

SEWARD, KANS.—Articles of incorporation have been filed by the Seward Telephone Company, of Seward, Kans.

HOUGHTON, MICH.—A movement is on foot in Houghton looking toward the organization of an Independent telephone company to compete with the Bell Company. It is understood that influential capitalists in Houghton and Chicago are back of the project.

ELLENDALE, MINN.—The Ellendale Rural Telephone Company, with a capital stock of $10,000, has been incorporated. The incorporators are W. A. Stanton, W. E. Calloway and E. M. Thompson.

SEBEKA, MINN.—Articles of incorporation have been filed by the Sebeka Telephone Company, of Sebeka, Wadena county. The company has an authorized capital stock of $10,000, and among the incorporators are O. V. Johnson, F. C. Haverkost and W. R. Kewen, all of Sebeka.

LAUREL, MISS.—Owing to the increase in rates by the Cumberland Telephone Company, the citizens of Laurel are taking steps to organize an Independent company to operate between Laurel and Ellisville. Stock subscriptions are now being solicited by the promoters of the movement.

VICKSBURG, MISS.—Owing to the unsatisfactory service being rendered by the Cumberland Company in Vicksburg, a number of prominent business men of that city are discussing a company to install a home plant with modern equipment. Local capitalists will control the corporation, and arrangements will be made for both local and long distance service.

KAHOKA, MO.—The Gates Telephone Company, with headquarters at Kahoka, has been incorporated with a capital stock of $10,000.

BLAKESLEE, PA.—The Blakeslee and Fern Ridge Telephone Company has been organized, and will construct lines between Blakeslee, Fern Ridge and Pocono Lake, with long distance connections at Stroudsburg. Among those interested in the new enterprise are James Warner, Frank Blakeslee, George Wagner, Edward Hawk, George Hamil and Philip G. Henning.

CASCADE SPRINGS, S. D.—A new Independent telephone company, to be known as the Cascade Telephone Company, has been incorporated at Cascade Springs. The company will start business with a capital of $1,500, and the incorporators are A. S. Beebe, Henry Fruday, W. P. Hamelstrom and Fred Nunenberg.

MOAB, UTAH.—The Blue Mountain Telephone and Electric Company has filed articles of incorporation. It has a capital stock of $10,000, and the following officers have been elected: President, D. L. Goudelock, Moab; vice president, J. M. Cunningham, La Sal; treasurer, V. P. Martin, Moab; secretary and manager, J. N. Corbin, Moab. The principal place of business is to be at Moab, and it is the company's intention to construct and maintain telephone lines and exchanges in all parts of the states of Utah and Colorado.

DIAMOND, WASH.—The Diamond Telephone Company, of Diamond, has been incorporated with a capital stock of $2,000. Among the incorporators may be mentioned F. W. Ertel, W. M. Lee and Henry Rock.

MATTESON, WIS.—Articles of incorporation have been filed by the Matteson Telephone Company, of Matteson, Waupaca county. It has an authorized capital stock of $6,000, and the incorporators are L. A. Burgess, C. G. Fergot and Noyes Matteson.

FRANCHISES.

CARLINVILLE, ILL.—The Macoupin Telephone and Telegraph Company has applied for a franchise at Carlinville.

WALKER, IA.—Application has been made by the Farmers' Mutual Telephone Company to construct and operate a telephone system at Walker.

MEMPHIS, MICH.—The common council of Memphis has granted a telephone franchise to F. S. Church, of Port Huron.

FINANCIAL.

MOBILE, ALA.—The directors and officers of the Home Telephone Company have voted to increase the preferred stock from $20,000 to $150,000, and the common stock from $350,000 to $500,000.

LOUISVILLE, KY.—The Kentucky Telephone Securities Company has made an offer to take over the control of the Louisville Home Telephone Company, and to guarantee a dividend of 5 per cent. It is said that the new company intends to make extensive improvements, and that not only the fund of $50,000, but the whole stock of the Securities Company, amounting to $1,000,000, is responsible for the payment of the 5 per cent. dividend.

BUTTERNUT, MICH.—At a recent meeting of the Farmers' Exchange Telephone Company, the capital stock was increased from $2,000 to $12,000, and the number of directors increased from three to five.

GRAND RAPIDS, MICH.—At a recent meeting of the Citizens' Telephone Company, the regular quarterly dividend of 2 per cent. was declared, payable January 19.

ST. LOUIS, MO.—The board of directors of the Kinloch Long Distance Telephone Company has declared the regular quarterly dividend of 1¼ per cent on the capital stock of $2,800,000, payable January 15.

TECUMSEH, NEB.—The stockholders of the Home Telephone Company are receiving their quarterly dividends amounting to a rate of 8 per cent. per annum.

HANNIBAL, O.—The capital stock of the Hannibal and Round Bottom Telephone Company has been increased from $2,500 to $5,000.

COLUMBIA, PA.—The Columbia Telephone Company, which began business ten years ago with a capital of $5,000 and forty-two subscribers, now has over 700 subscribers, and its capital stock has been increased to $75,000.

MEADVILLE, PA.—At a recent meeting of the Eastern Crawford Telephone Company it was decided to increase the capital stock from $20,000 to $50,000. The increased capital is to be used in extending the company's lines.

COMBINATIONS.

MACOMB, ILL.—Plans are under way for the union of all farmers' lines in McDonough county, with headquarters at Macomb.

ELECTIONS.

STUTTGART, ARK.—The Arkansas Mutual Telephone Company has elected the following officers: I. Thacker, president; Robert Blohm, vice president; R. G. Harper, secretary; J. C. Jackson, treasurer.

CORONA, CAL.—The following directors have been elected by the Corona Home Telephone and Telegraph Company: R. F. Billings, D. M. Browning, W. J. Pentelow, S. S. Willard, J. C. Gleason, J. P. Triolo and A. C. Wood.

LONE STAR, CAL.—The Star Telephone Company has elected the following officers: Ed. Gassaway, president; W. C. Peaslee, secretary; Herman Oost, vice president; Wm. Cramer, treasurer; Ed. Ridinger, assistant secretary.

YAMPA, COL.—The following directors have been named by the newly organized Routt County Mutual Telephone Company: A. C. Bower, H. J. Hernage and John Dunckley.

ROCKFIELD, ILL.—At the annual meeting of the Rockfield Co-operative Telephone Company the following officers were elected: John Kerlin, president; A. L. Surface, vice president; P. W. Van Gundy, secretary; Thomas Robinson, general manager; trustees, Samuel Clauser, C. L. Million and A. M. Rankin.

YEOMAN, IND.—The following officers have been elected by the Yeoman Co-operative Telephone Company: President, E. O. Teach; secretary, William M. Goslee; treasurer, George Breeze; directors, John Million, Charles Ginn, Martin M. Baum.

CAMDEN, MICH.—The following officers and directors have been elected by the Camden Rural Telephone Company: President, Henry Haynes; vice-president, Chas. Cook; secretary, Chas. Small; treasurer, B. R. Allward; directors, S. B. Goodman, Jas. Crow, W. J. Pease, F. W. Rowe and S. S. Townsend.

CERESCO, MICH.—At a meeting of the North Marshall Telephone Company at Ceresco the following officers were elected: President, Fred Lutz; vice-president, Dr. Gubbons; secretary, P. M. King; treasurer, Albert Fohr.

STILLWATER, MINN.—The Fairy Falls Rural Telephone Company has named George Jarchow as president; John Nelson, as vice president; Christ. Frazer, secretary-treasurer; James Leslie, Robert Harrigan and Emil Jarchow as directors.

COLUMBUS, NEB.—At the annual meeting of the Platte County Telephone Company C. J. Garlow was elected president; G. T. Everett, vice president; R. V. Lisco, second vice president; A. Anderson, treasurer; T. J. Cottingham, secretary and manager.

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All With The

"Patent Drip Petticoats"

THE HEMINGRAY-GLASS CO.

Office, Covington, Ky.
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Established 1848

Our Price is Right

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TELEPHONE MADE

with all connecting wires, binding posts and terminal screws fully concealed

To Prevent Trouble

and with no exposed metal parts in the circuit to

Avoid Danger

from lightning while using the instrument. Send us your inquiry and we will "SHOW-U" at our expense an interesting proposition.

INTERNATIONAL TEL. MFG. CO.
Harrison and Clinton Sts., Chicago

MICHIGAN WHITE CEDAR POLES

In addition to the several yards we have had in the past, we wish to call your attention to our new yard which is located at Escanaba, Mich.

The acquisition of this new yard enables us to ship poles by all railroads or by the lake routes, thereby enabling us to give the best delivered prices.

The location of our new yard makes it easier to secure cars, thus facilitating prompt shipment.

In many cases poles can be shipped by car-ferry, making possible a great saving in cases of shipment to Eastern points.

We are wholesalers exclusively, shipping in car lots only.

Write us for delivered prices and "Pole Booklet No. 3-A." Yours for the asking.

KELLOGG SWITCHBOARD & SUPPLY CO.

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of **Roebling Double Galvanized Telephone Wire** bears a tin tag and lead seal upon which the word "**Roebling**" is stamped.

Don't accept Wire without the **Roebling Seal.**

JOHN A. ROEBLING'S SONS CO., - TRENTON, N. J.

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THE WEEK'S MESSAGES

GREENE, N. Y.—The newly elected officers of the Chenango Valley Telephone Company are: President, J. H. Lenderson, of Greene; vice-president, E. H. Alderman, Castle Creek; secretary, F. E. Page, Greene; treasurer, William Ransom, Glen Castle; general manager, Frank H. Williams, Greene.

ROCHESTER, N. Y.—The following directors have been named by the Stromberg-Carlson Telephone Manufacturing Company: J. C. Woodbury, P. M. French, William A. E. Drescher, H. P. Brewster, A. J. Katz, Albercht Vogt, G. W. Peck, J. C. Powers and C. F. Lomb.

MISCELLANEOUS.

WASHINGTON, D. C.—The signal office of the army is purchasing more than 500 telephones for use in the fire control systems at various points along the Pacific Coast. The installations will be begun at the several defenses on Puget Sound.

CAIRO, ILL.—The name of the Cairo Telephone Company has been changed to the Home Telephone Company, of Cairo.

ST. JOSEPH, ILL.—The St. Joseph Telephone Company has been purchased by L. F. Schwerdtfeger, of Lincoln, Ill., who will make many improvements in the system.

ROCKFORD, ILL.—It is the intention of the Independent Telephone Company, of Rockford, Ill., to connect with the Independent Company, of Brodhead.

MONTICELLO, IND.—An agreement has been entered into between the Monticello Telephone Company and the Idaville Co-operative Telephone Company for an exchange of service.

SPURGEON, IND.—The Home Telephone Company expects to form connections with the Independent Telephone Company at Oakland City.

AUBURN, NEB.—The controlling interest in the Auburn Telephone Company has been sold by the president, J. C. Killarney, to the following business men of the city: E. Ferneau, E. M. Boyd, H. A. Lambert, O. R. Young, H. E. Furlong, R. C. Boyd, Geo. Codington, W. W. Harris and S. W. Eustice. It is the intention of the new owners to spend about $15,000 in improving the plant. Mr. Killarney will have active management of the affairs of the company.

NACOGDOCHES, TEXAS.—Within six hours of the burning of the exchange of the South Texas Telephone Company, at Nacogdoches, the general manager, J. B. Earle, placed an order for new equipment. A new multiple central energy board, with 540 lines equipped, is to be installed. It is said that the board was to have been shipped within eight days of the time of the fire, so that the company will speedily resume operations.

BROWNTOWN, WIS.—Arrangements have been made with the United Telephone Company by which the Browntown Telephone Company secures the benefit of Monroe service for its subscribers.

PERSONAL.

JOHN R. ALEEN has recently assumed management of Northwestern Telephone Exchange Company's plant at St. Cloud, Minn.

S. M. GREER, until recently secretary to Mr. U. N. Bethell, the vice-president of the New York Telephone Company, president of the New York & New Jersey Telephone Company, and also president of several other telephone companies in the East, has been appointed contract agent of the Long Island division of the New York & New Jersey Telephone Company. He succeeds Mr. A. R. Pardington, who resigned his position to become vice-president and general manager of the new Long Island Motor Speedway Company.

LUTHER HAWKINS has been promoted to the management of the exchange of the Southern Bell Telephone & Telegraph Company at Americus, Ga.

C. M. MAUSEAU has been promoted from the position of assistant general manager to that of general manager of the Northwestern Telephone Exchange Company in Minneapolis, Minn.

F. E. MONTAGUE, formerly State superintendent of the Southern Bell Telephone and Telegraph Company, with headquarters at Richmond, Va., has recently gone to Atlanta to take a newly created position, with the title of Superintendent of Exchange Traffic.

New Construction in the Field

WILLOW, CAL.—It is the intention of the Colusa County Telephone Company, which is now constructing a line at Willow to build lines throughout Colusa County, Glenn County and the northern part of the Sacramento Valley.

MIAMI, FLA.—Many improvements are being made in the system of the Miami Telephone Company.

SODA SPRINGS, IDAHO.—A private telephone system is being installed by the Telluride Power Company from Soda Springs to Alexander.

HILLVIEW, ILL.—The Illinois Telephone Company contemplates the erection of a toll line from Hillview to Pearl, to connect with the Pike County Telephone Company.

AUBURN, IND.—Many improvements and extensions are to be made by the Home Telephone Company, of Ft. Wayne, in its system at Auburn.

MONTICELLO, IND.—A new switchboard is to be installed by the Monticello Telephone Company.

MOORES HILL, IND.—A new exchange is to be installed by the Moores Hill Telephone Company. It is the company's intention to exchange free service with the new exchange at Milan.

SHELBYVILLE, IND.—Among the improvements planned by the Smithland Telephone Exchange Company is the installation of a new switchboard.

VAN BUREN, IND.—The Independent Telephone Company at Van Buren has rebuilt its entire system.

ARDMORE, I. T.—The Chickasaw Telephone Company has expended about a quarter million of dollars in the past six months on improvements at Ardmore and on long distance lines leading out of Ardmore.

GLIDDEN, IA.—Among the improvements planned by the Glidden Telephone Company is the erection of a line to Carroll.

OSKALOOSA, IA.—The lines of the Home Telephone Company are to be extended in Oskaloosa.

IOLA, KANS.—The lines of the Iola Telephone Company are being greatly improved and extended.

PIQUA, KANS.—The Enterprise Telephone Company is to build new lines in East Piqua.

CAIRO, MICH.—Many new lines are being built by the Moore Telephone Company at Cairo.

CHARLOTTE, MICH.—Improvements are being made by the Eaton County Telephone Company in its system at Charlotte.

ELK RAPIDS, MICH.—The Citizens' Telephone Company is extending its lines in Elk Rapids.

GRAND RAPIDS, MICH.—The Citizens' Telephone Company, of Grand Rapids, is installing a new system at Holland. A building has been purchased for its exchange, considerable conduit work done, and the cable plant and improvements will represent a cost of $60,000.

LANSING, MICH.—The Citizens' Telephone Company contemplates the expenditure of about $100,000 in the improvement of its system. The erection of a new telephone building is being considered by the company.

ALAMOGORDO, N. M.—The Sacramento Telephone Company, recently incorporated, is about to commence the construction of its system.

NORTH GAGE, N. Y.—Many improvements are to be made in the lines of the Farmers' Telephone Company.

NORWICH, N. Y.—The telephone system owned by J. B. Marquis is to be improved by the installation of a new switchboard and the construction of new lines.

ERIE, PA.—The Mutual Telephone Company is building a sixty-foot addition to its local exchange, and is to double its equipment and facilities to take care of its increased business. A new switchboard which will provide connections for 10,000 telephones is to be installed, and it is the company's intention to make its plant first-class in every particular.

SPOKANE, WASH.—Plans are being made by the Interstate Telephone Company to extend its lines to the Coeur d'Alene mining district. It is estimated that the total cost of the improvements will amount to $125,000. A new two position switchboard is being installed at Sandpoint, and lines are being built from Sandpoint to Laclede.

HYATTVILLE, WYO.—The Farmers' Telephone Company is constructing additional lines in Hyattville.

UNDERGROUND.

INDIANAPOLIS, IND.—The Board of Public Works is considering the advisability of compelling the telephone companies to place their wires underground in certain parts of the city.

COLDWATER, MICH.—The Wolverine Telephone Company has under construction some underground work at Coldwater.

ST. PAUL, MINN.—An ordinance has been introduced in the common council of St. Paul to extend the limits compelling telephone companies to place their wires in conduits.

CAMDEN, N. J.—The Keystone Telephone Company desires to place its wires underground in Camden.

KENTON, O.—Considerable conduit work is to be included by the Kenton Telephone Company in its contemplated improvements at Kenton.

GREENSBURG PA.—The Pittsburg-Johnstown Telephone Company is considering the advisability of establishing a conduit system at Greensburg.

WAYNESBURG, PA.—Considerable conduit work is to be done by the Greene County Telephone Company at Waynesburg, Pa.

BENWOOD, W. VA.—The National Telephone Company is to place its wires under ground in some of the streets of Benwood.

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Prompt Shipment. Write Us.

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POLES
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16 to 25 ft.
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For Rural Lines
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WHITE CEDAR POLES Longest Lasting Best Grade
40,000 IN STOCK NOW. 100,000 TO 150,000 BY APRIL 1st
25 YEARS HAVE WE BEEN PRODUCING POLES. WRITE US
Yards { Omer, Bay City and Boyne Falls
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Buy from the Producers and Save Jobbers' Profits.

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POLES
20 and 25 foot lengths for rural telephone lines a specialty.
PORTER CEDAR CO., Saginaw, Mich.

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The Lindsley Brothers Co.
PRODUCERS AND SHIPPERS OF
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RED FIR CROSS ARMS
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Eastern Sales Office: MARQUETTE BLDG., CHICAGO, ILL.

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HARRISON, N. J.

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TELEPHONE LAMPS 869

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GENERAL
STORAGE BATTERY CO
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That's Our "New Form"
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All kinds of blanks, books and forms for Telephone and Toll Line Accounting. Write for sample forms and prices.
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SILK COVERED **MAGNET WIRE**
For Telephone Construction Purposes
Prompt attention given to quick delivery orders.
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We make a specialty of all kinds of telephone printing, particularly two-color shield work. Let us figure on your next directory or anything you may need in the printing line. We sell all sizes of shield cuts. Send for sample sheet and price list.
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ENGINEERS: CONSTRUCTORS
Telephone and Telegraph Properties
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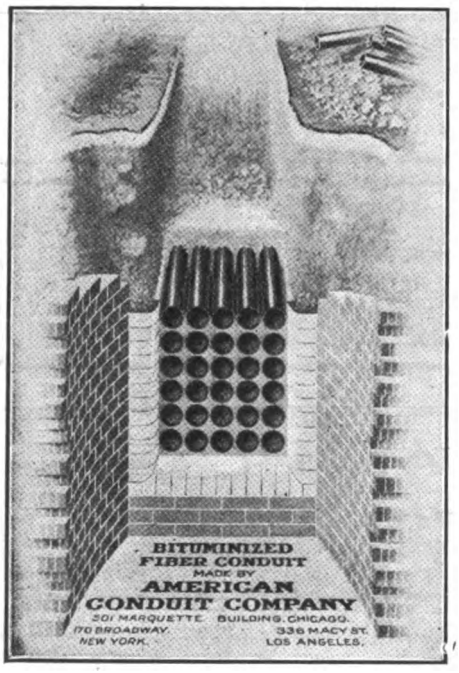

BEWARE OF IMITATIONS

For the protection of our customers we advise that Klein's Pliers are being imitated to LOOK LIKE KLEIN'S. This, however, does not make them Klein's.
CAUTION. Look for this stamp, M. KLEIN & SONS, on the inside of handles—NONE are genuine without this stamp.
Use only genuine Klein's. They are the product of years of experience and have stood the test of time.
MATHIAS KLEIN & SONS · CHICAGO, ILL.

W. H. CRUMB & COMPANY
ENGINEERS CONTRACTORS
TELEPHONE ENGINEERING AND CONSTRUCTION
Plans, Specifications and Estimates Promptly Furnished
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WESTON
STANDARD PORTABLE
DIRECT READING

Voltmeters, Ammeters, Millivoltmeters, Voltammeters, Milliammeters, Ohmmeters, Portable Galvanometers, Ground Detectors and Circuit Testers.

Our Portable Instruments are recognized as THE STANDARD the world over. Our STATION VOLTMETERS AND AMMETERS are unsurpassed in point of extreme accuracy and lowest consumption of energy.

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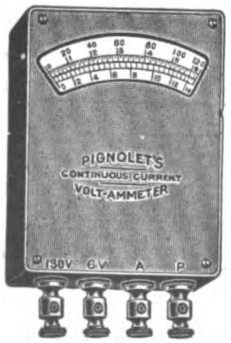
London Branch—Audrey House, Ely Place, Holborn.
Paris, France—E. H. Cadiot, 12 Rue St. Georges.
Berlin—European Weston Electrical Inst. Co., Ritterstrasse, No. 88.
New York Office—74 Cortlandt Street.

Weston Standard Portable Direct Reading Voltmeter.

Do you always mention AMERICAN TELEPHONE JOURNAL when writing to advertisers? It will be appreciated by all concerned if you do.

CHEAP VS. EFFICIENT SERVICE



The cheapest telephone service in the world is dear at any price if it is not efficient.
When a man installs a telephone he wants to be able to use it and not to abuse it.
A grounded line nine times out of ten is noisy, and foreign noise on a telephone line will arouse a feeling of anger in the heart of the user that isn't good for the company. You can keep your lines free from grounds and other troubles by periodic tests with a Pignolet voltmeter, and when they do occur, you can locate them with this instrument, and get them cleared often before the subscriber knew his line was in trouble.
If you need your subscribers' good will, you need my voltmeter to get it.
LOUIS M. PIGNOLET, Originator of the Voltmeter Habit
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COMMERCIAL ELECTRICAL SUPPLY COMPANY. HIGHEST GRADE ST. LOUIS TRADE MARK

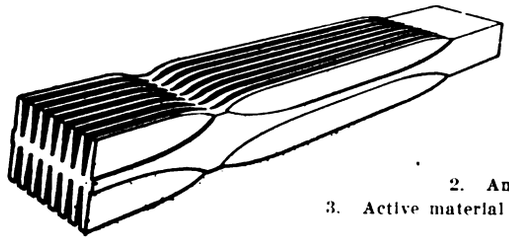
Every time you see it on correspondence on your desk it means a chance to save money.

We issue quarterly a net price list of line construction lumber, plain and galvanized hardware and telephone wires and cables. It contains up-to-date market prices and enables prospective purchasers and engineers to make estimates on new construction. Ask for it and you will be placed on our lists and receive it regularly.

Commercial Electric Supply Co.

15th STREET, ST. LOUIS, MO.

COMMERCIAL



The Facts at a Glance

The accompanying detail drawing emphasizes four important facts about the Gould Storage Battery Plate.

1. The ribs forming the contact surface are part and parcel of the grid and frame.
2. Ample longitudinal and lateral conductors secure uniform current distribution.
3. Active material will not fall out, so that the plate retains its initial capacity during its long life.

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Take one of your busy 4-party lines and equip it with "POOLE" Lock-Outs. Leave it in service a month and then see how many of the four will stand a raise of $3.00 a year rather than go back to the old way. We know the answer, but we want your subscribers to impress on you the fact that the "POOLE" Lock-Out is a rate-raiser.

It won't cost you anything to try it, because we will loan you the Lock-Outs free and there is no other equipment required. Write today for our Booklet AL-2.

Mountain State Electrical Company

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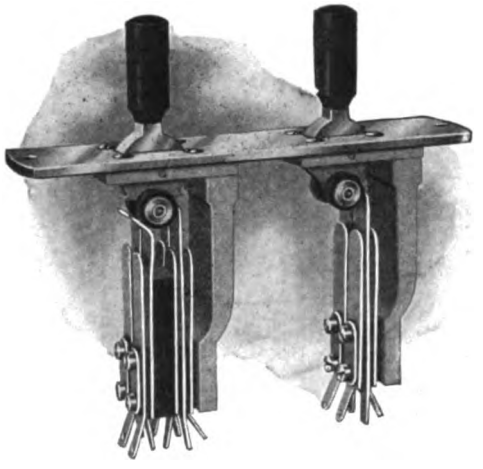
DEAN TELEPHONE APPARATUS

EXPRESS SWITCHBOARD KEY



In the last two issues we have told you about some of our express type switchboard apparatus. This week we call attention to one of our cord circuit keys, which is shown in the accompanying illustration.

The key attached to the left-hand end of the escutcheon is a combined listening and ringing key for listening across the cord circuit and for ringing on the front cord, while the other key is for ringing on the back cord.

The framework of these keys is made very rigid from heavy brass stock. The cams are in one piece, with stops to limit their movements, while the cam handles are attached by large steel screws which are sufficiently long to reinforce the parts and prevent breakage. The rollers for preventing friction of the cams on the springs are securely fastened so that there is no chance for them to work loose. The springs are special German silver, with riveted platinum contacts, while all of the insulation is hard rubber.

These keys have a very easy and positive action, with no sliding friction, thus insuring indefinite life.

See our folder No. 6 for further description of our express type switchboards, a copy of which will be mailed to you, free, on request.

It will pay you to investigate. "We give more value for the same money."

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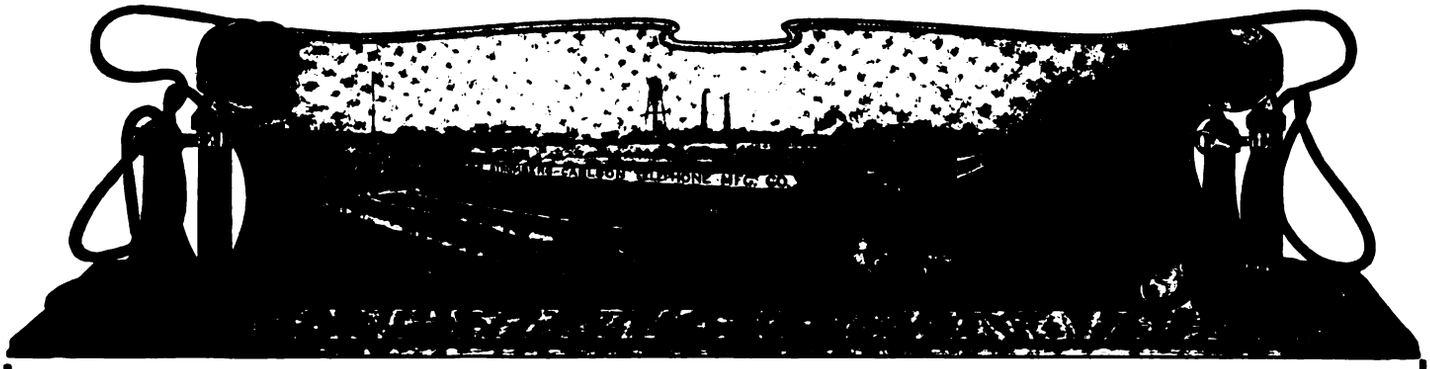
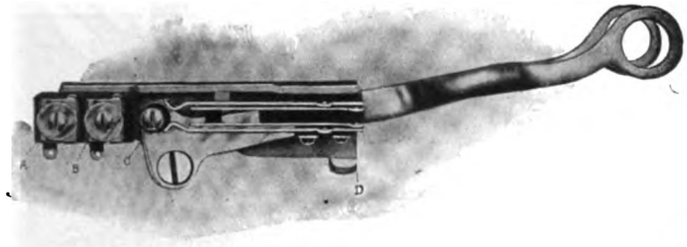
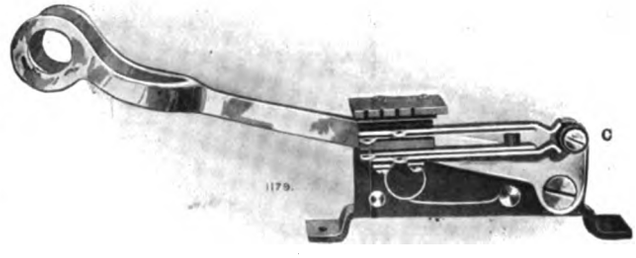


Stromberg-Carlson Efficiency and Durability are well and favorably known. The accompanying illustrations show two styles of Hook-switches, which for simplicity and mechanical construction are characteristic of Stromberg-Carlson Apparatus.



The movement of the hook downward causes the hard rubber insulated pin (C) to be drawn in between the German Silver springs, thus breaking contact, while the upward movement of the hook allows them to come together and close the circuit. The very best of materials only are used. Thorough reliability and the highest efficiency are guaranteed. Manufacturers of Telephones and Switchboards of the highest grade for all classes of service.



If you will mention your requirements and this advertisement, descriptive bulletins will be mailed free.

STROMBERG-CARLSON TELEPHONE MFG. CO.

ROCHESTER, N. Y. CHICAGO, ILL.

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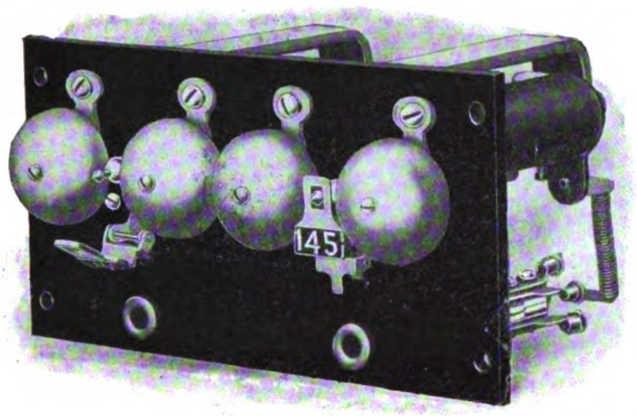
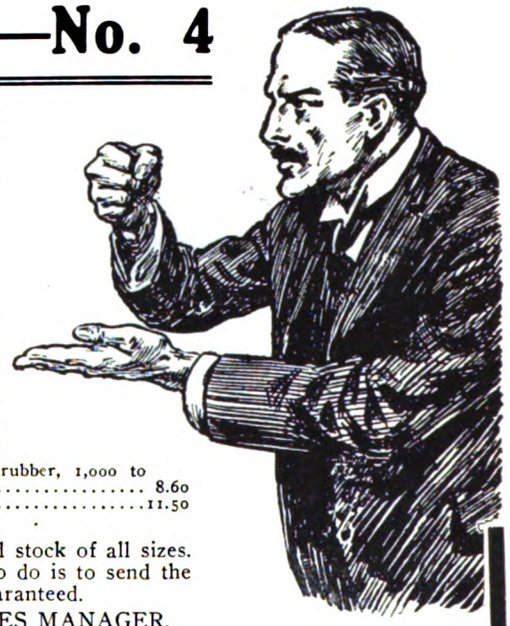


TOLL LINE SIGNAL

This signal is made up of standard ringer coils and a regular jack. The striker rod of the ringer has a projection beyond the striker ball which engages the drop. The mounting plate is just twice as large as the plate for five Monarch drops and jacks, so two ringers, drops and jacks occupy the space of ten drops and jacks. Our catalogue describes this toll line signal.

MONARCH TELEPHONE MFG. CO.
CHICAGO, U. S. A.

Talks With The Buyer—No. 4



The number of answers that I received to my last talk, asking for free samples of our Ajax battery with which to make test, encourages me greatly, answers having come from great distances. The Ajax battery offer is still open; read my last talk. Now I want to call your attention to our especially attractive prices on

Rubber Covered Telephone Wires

By the placing of contract for an enormous quantity we were enabled to secure, before the advances, a particularly attractive price, of which we are giving the benefit to our customers. Prices will talk better than words. Here are a few:

No. 532, No. 19 gauge single conductor plain rubber, no braid, lots of 1,000 to 5,000 ft., per M.....$3.25
No. 533, No. 19 gauge single conductor saturated braid, 5/64 rubber, 1,000 to 5,000 ft., per M..... 4.25
No. 18, 3/32, 1,000 to 5,000 ft..... 5.55
No. 534, No. 19 gauge rubber conductor, 5/64 plain rubber insulation, no braid, one red, one black, 1,000 to 5,000 ft., per M..... 6.50
No. 538, No. 19 gauge double conductor, braided, one conductor with tracer, 5/64 rubber, 1,000 to 5,000 ft., per M..... 8.60
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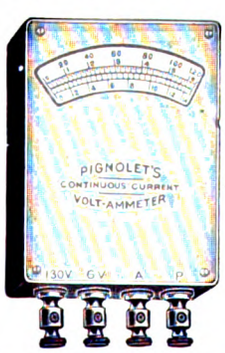

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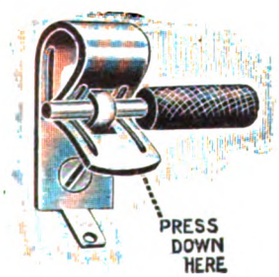

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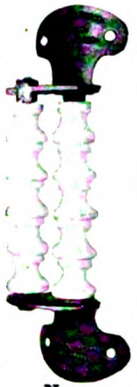

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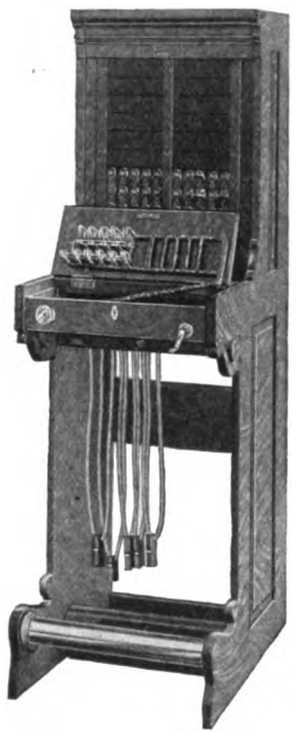

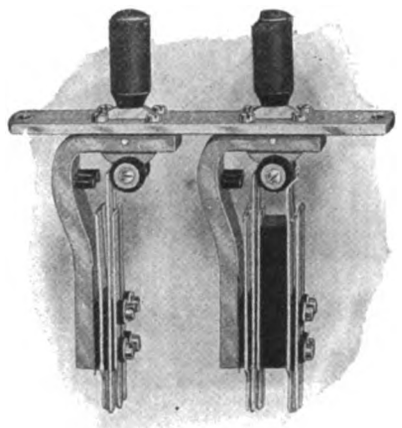

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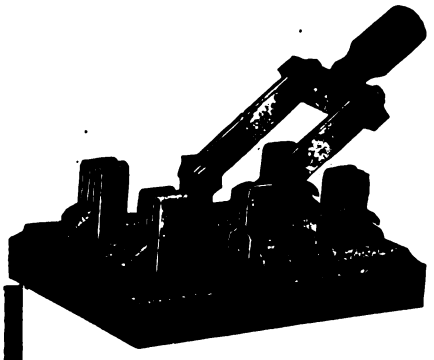

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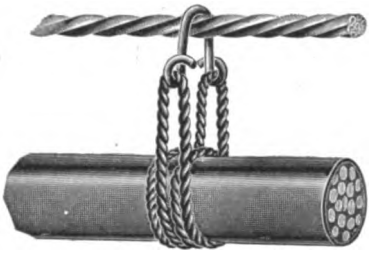

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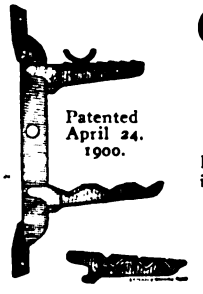

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VOLUME XV. SATURDAY JANUARY 26, 1907. NUMBER 4.

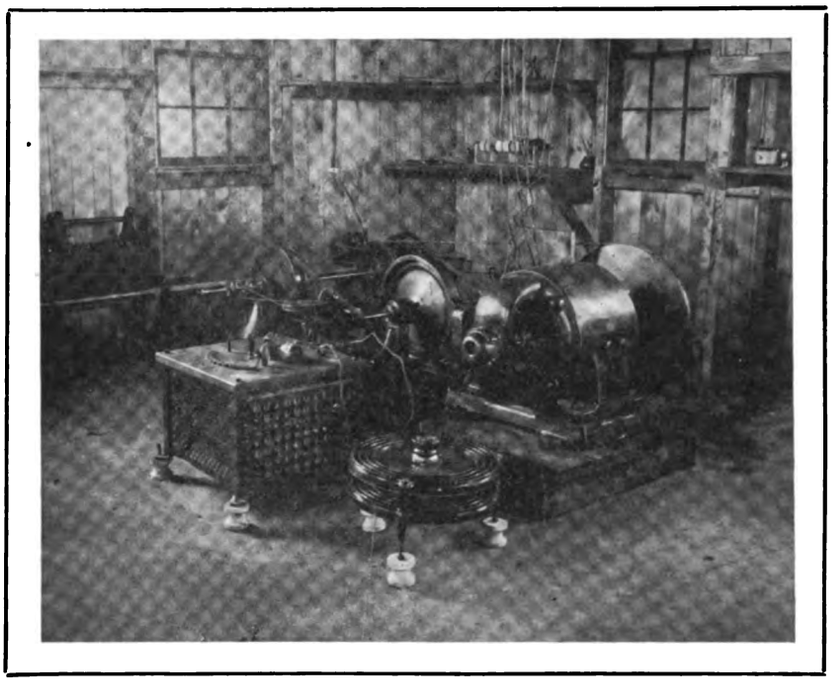
Experiments and Results in Wireless Telephony

By John Grant.

WIRELESS transmission of speech over a distance somewhat greater than ten miles was satisfactorily accomplished in the presence of a number of persons invited to witness a demonstration of a new system of wireless telephony at the experimental station of the National Electric Signaling Company, Brant Rock, Mass., on Dec. 21st, 1906.

The representative of The American Telephone Journal who was present at these tests was furnished by Professor Reginald A. Fessenden, the inventor of the system, with many facts which have made it possible to trace in the present article the development of his work. For this purpose abstracts without quotation will be freely made from an article which has been furnished by him for publication in the *Electrical Review*, London, and from descriptions embodied in United States patents which have already been issued.

Speaking broadly, wireless telephony by this system is accomplished by generating a practically continuous succession of electromagnetic waves, modifying the character of the emitted impulses by means of sound waves without interrupting their continuity, and receiving them in a constantly operative receiver of suitable form which controls a local circuit containing a battery and telephone receiver. The apparatus which was seen in successful use at the time of the recent tests is the result of a series of diligent investigations in which a large amount of work was done only to show the necessity of rejecting plans which did not definitely lead to the desired quality of transmission.



A Corner in the Laboratory at Brant Rock, Showing New High Frequency Alternator, the Source of Energy for Wireless Telephone Experiments.

Beginning his work on the subject in 1898, Professor Fessenden made some experiments which were entirely unsuccessful. At this time the only recognized means for the practically continuous generation of electromagnetic waves capable of being propagated through space to affect a distant receiving instrument were:

(*a*) The plain aerial with spark gap used by Marconi.

(*b*) The plain aerial heavily loaded with inductance, used by Lodge.

(*c*) The plain aerial in conjunction with a local oscillatory circuit having a period of a different order of magnitude from the period of the antenna, used by Braun.

Lodge's method was found to be the only one adapted to produce prolonged trains of waves. Tietz at an early date had used Leyden jars connected across the spark gap, and later Braun described and used a Leyden jar and antenna sending circuit in which the natural period of the Leyden jar circuit was specified as of a different and lower order than that of the antenna circuit.*

None of these methods, however, gave the results desired. Professor Fessenden conceived the idea that good results could be obtained by the use of an antenna in conjunction with a local circuit tuned to the same frequency as the aerial.†

This method, used by him in association with Professor Kintner, proved to give a fairly satisfactory means of producing a long train of waves, and is now extensively used. After making various tests with a Wehnelt interrupter and other devices with which more or less encouraging results were obtained, an induction coil and commutator were settled upon as a make and break mechanism for the tuned circuit. With this circuit, and apparatus giving 10,000 sparks per second, the experiments in wireless telephony led to the transmission of speech, which was first accomplished in the Fall of 1900. The antennae were two masts, 50 feet high, set up one mile apart at Rock Point, Md. A commutator making 10,000 breaks per second in circuit with an induction coil was used for generating waves.

In these experiments the articulation was of a sort which left considerable room for improvement, and there was a noise, due to the irregularity of the spark, which was always extremely disagreeable and at times overpowering. This led to the invention of the compressed gas spark gap,‡ which gave a steadier spark. This device is essentially a spark gap having its terminals, 4, 5 (Fig. 1), enclosed in a chamber in which the gas may be subjected to a pressure produced by the pump 8. This spark gap is connected between the ground and the antenna, shunting the source of energy, the circuit of which contains a make and break device. In practice the chamber was filled with compressed air,

*Braun, English patent No. 1,862, A. D. 1899.
†U. S. Patent No. 706,735.
‡U. S. Patent No. 706,741.

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from which the oxygen was absorbed by lime in the bottom of the chamber, leaving compressed nitrogen. The appearance of the exterior of the apparatus is shown in Fig. 2. Later a mercury gap of the Cooper-Hewitt type was used, but with this the results obtained were not quite as good as with the compressed gas gap, even when the spark was localized as much as

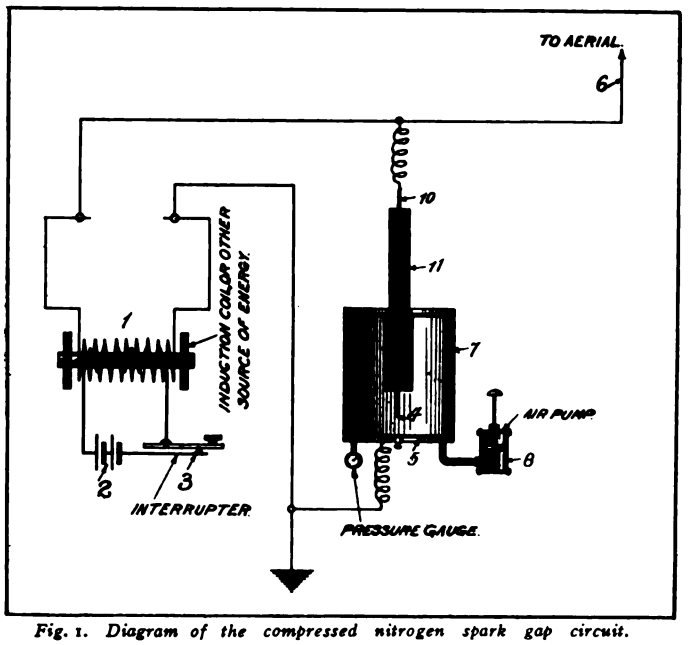

Fig. 1. Diagram of the compressed nitrogen spark gap circuit.

possible by small points of platinum-iridium wire projecting to the surface of the mercury.

With these types of apparatus high speed breaks of various kinds were used. In 1901 and 1902 experiments were made, using Elihu Thomson's method of producing rapid oscillations by means of an arc and shunted resonant circuit. Better results were obtained by a modification of this method, using regulating resistance, compressed gas gaps and governing circuits for the purpose of making it more applicable to practical working, but there was still a very considerable amount of foreign noise in the telephone circuit.

Work on high frequency alternating current dynamos had been begun in 1900, and in 1902 an alternator giving 10,000 cycles per second was completed at the works of the General Electric Co. and delivered to Professor Fessenden. This was a 1 kilowatt machine, delivering about 10 amperes at 100 volts. With it was used an air core transformer giving about 10,000 volts, and an interrupter producing 20,000 sparks per second. It was necessary to use the spark gap, as the frequency of the machine was not high enough for the direct production of electromagnetic waves. This combination, however, on account of the regularity of its action, gave much better results than the rotating break, and measurements made in Washington in 1904 led to the belief that transmission could be effected over a distance of 25 miles.

Continued experiments were made with spark gap apparatus of various types, and in many cases fairly good articulation was obtained. With all these types of apparatus, using a spark gap, however, while radiation was sufficiently continuous for the transmission of speech, it became more and more evident that the quality of articulation demanded for commercial telephony could not be obtained without a source of power which would give completely continuous radiation. Among the many methods for obtaining this which were tried was the very interesting method of producing high frequency oscillations commonly known as the musical arc, using a continuous current arc shunted by a condenser and inductance in connection with a magnetic blow out, invented by Professor Elihu Thomson.

Professor Fessenden as early as 1898 had by his experiments verified the statement made by its inventor* that frequencies as high as 50,000 or more can be obtained in this way. This statement, it is interesting to note,. was controverted as late as 1903 by Duddell,† who seems to have not fully grasped the method of operation of the device, although many European scientists have even incorrectly attributed its invention to him.

The experiments made with this method of producing oscillations showed it to be hardly satisfactory. By the use of properly cooled electrodes and an air blast and magnetic blow out, very high frequencies were obtained, but it was found that neither frequency nor intensity was constant. The fact that a key could not be used to make and break the circuit, since the arc would not start itself, made it impracticable in its original shape.

In order to overcome the difficulties arising from irregularity, the plan was modified by the substitution for a pure inductance in series with the arc of a coil having a considerable resistance with only a moderate amount of self-induction. This resistance was so adjusted and proportioned to the shunt resonant circuit as to maintain the frequency almost absolutely constant.‡

In Fig. 3 the coil 59 is shown in series with the arc in the sending circuit. It is so designed as to have a high resistance but low inductance, and any suitable means, such as a plug, 60, may be provided for shunting out more or less of the resistance. In operation, when condenser 12*a*, has been charged to a sufficient potential, there will occur a discharge across the spark gap, discharging the condenser and setting up oscillations in the sending conductor. On account of the high resistance, 59, some time is required to recharge the condenser to sparking potential. The discharge is therefore intermittent, and may be made to occur as many times per second as is desired, within recognizable limits, by plugging out more or less of the resistance. With this apparatus the periodicity depends upon the discharge voltage, which is not liable to fluctuate.

To overcome the difficulty arising from the inability of the arc to start itself, a method of working was devised in which the arc operated continuously, and emitted radiation continuously and the signalling was done by altering the frequency of the emitted waves.§ Numerous experiments looking to the adaptation of this plan to telephony were made, but it was found that by none of the arrangements tried could the scratching and hissing noises in the receiver be eliminated. While these experiments were being carried on, work on the development of a new high frequency dynamo was making good progress. In the only patent which has yet been granted on this machine‖ its general characteristics are described as follows:

It is necessary that it should give a pure sine wave, as such a form is the only one adapted to give perfect resonance. With a dynamo giving such a curve forming a part of a suitably constructed sending conductor, Professor Fessenden asserts that if the machine be wound to give a thousand volts on open circuit, it is possible by means of resonance effects to obtain a voltage of 100,000 volts on the sending conductor. These resonance effects are obtained by using a dynamo of low internal resistance as a portion of a sending conductor of large capacity or self-induction, or both, having these electrical constants suitably proportioned to give to the sending conductor,

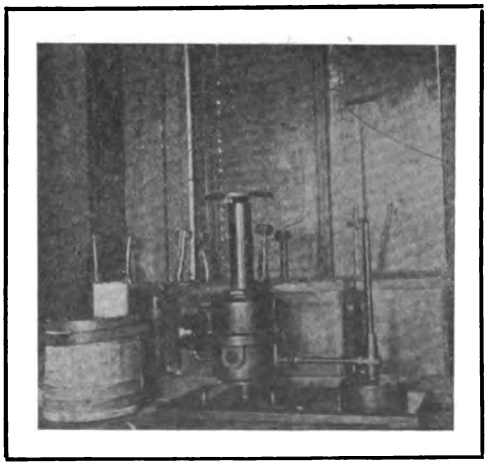

Fig. 2. Exterior of compressed nitrogen spark gap, as set up for use.

*In U. S Patent No. 500,630.

†London Electrician, Vol. 51, Page 902.
‡U. S. Patent No. 730,753.
§U. S. Patent No. 706,742.
‖U. S. Patent No. 706,737.

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that is, to the whole conductor from the top of the antenna to the ground, including the armature of the dynamo itself, a natural period identical with the periodicity of the dynamo. If the frequency of the dynamo were to be made lower than the periodicity of the radiating circuit the chief effects would be electrostatic and magnetic in their nature, and there would be practically no electromagnetic radiation. As it is only energy in the form of electromagnetic waves which may be transmitted to a great distance through the atmosphere, it is highly important that this effect should be predominant. The armature must have a low resistance, because if of a high resistance the oscillations will be dampened, making it impossible to produce high resonance voltages. Ventilation must be good, as the current may run up to a very high figure. The length of wire in the armature must be as small as possible, compared with the length of the sending conductor. If this relation were not maintained, the electrical constants of the entire sending conductor would be determined too largely by that part of the circuit between the armature terminals, and the amount of radiation would be much less than would be the case if the armature had a relatively small length of wire. Another way of stating this requirement is that the self-induction and capacity of the armature must be as small a fraction as possible of the self-induction and capacity of the entire sending conductor in order to secure the highest radiating efficiency. It is also essential that all iron magnetically influenced by currents in the conductor should be so proportioned and distributed as not to affect the shape of the curve of voltage, or to cause loss of power by hysteresis, as in such a case there would be too much dampening. For these reasons the dynamo may be constructed with a fixed armature containing no iron, having the air gap as long as possible, consistent with a high magnetic flux density, and revolving pole pieces so shaped as to produce sine waves as closely as possible. The revolving parts may be formed of magnetic material of high tensile strength, such as nickel steel. A peripheral speed of five miles per minute, which can be safely maintained with properly constructed moving parts of nickel steel, would allow the machine to be arranged to give one hundred thousand cycles per second. Such a speed can be obtained with a steam turbine to drive the dynamo.

The alternator which is at present in use is constructed along these lines, but embodies many ingenious mechanical arrangements due to the skill of several of the engineers of the General Electric Company, notably Dr. Steinmetz, Mr. Haskins, Mr. Alexanderson, Mr. Dempster and Mr. Geisenhoner.

This machine (Fig. 4) was originally designed for a frequency of 100,000 cycles, at an output of one kilowatt. It is now being driven by belting, pending the construction of a type to be driven by a De Laval steam turbine connected through gearing, and, on account of belt slipping, is never run at a speed to give more than 80,000 cycles. For most work it is run at 60,000 cycles, at which speed it has an output of about one-quarter of a kilowatt. The internal resistance of the armature is approximately six ohms, and the inductive drop at full load is about equal to the ohmic drop. At 60,000 cycles the voltage is about 60 volts. The armature makes 10,000 revolutions per minute, bearings being kept at a low temperature by lubrication controlled by oil pumps. The operation of the machine is said to be extremely satisfactory, it having been run daily for six or seven hours at a time with practically no attention. The design, and the method in which it has been worked out by the engineers and mechanics of the General Electric Company, mark a notable advance in dynamo-electric machinery, for which the highest credit is due to those who have developed this machine, accomplishing what has been declared by Fleming, in his latest published work in wireless telegraphy, to be an impossibility.

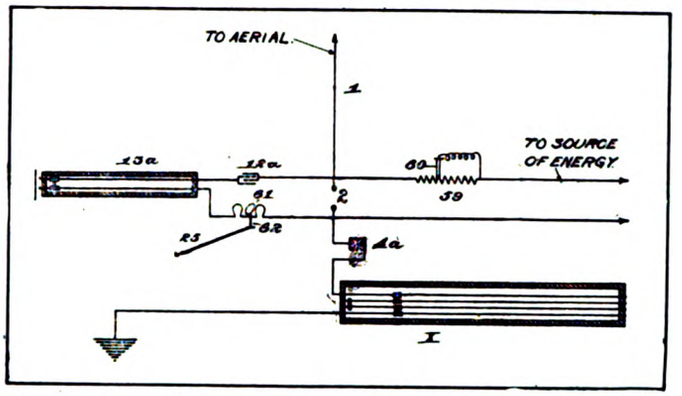

Fig. 3. Diagram of circuit used to regulate frequency of sparking in experiments with generation of waves by spark gap discharge.

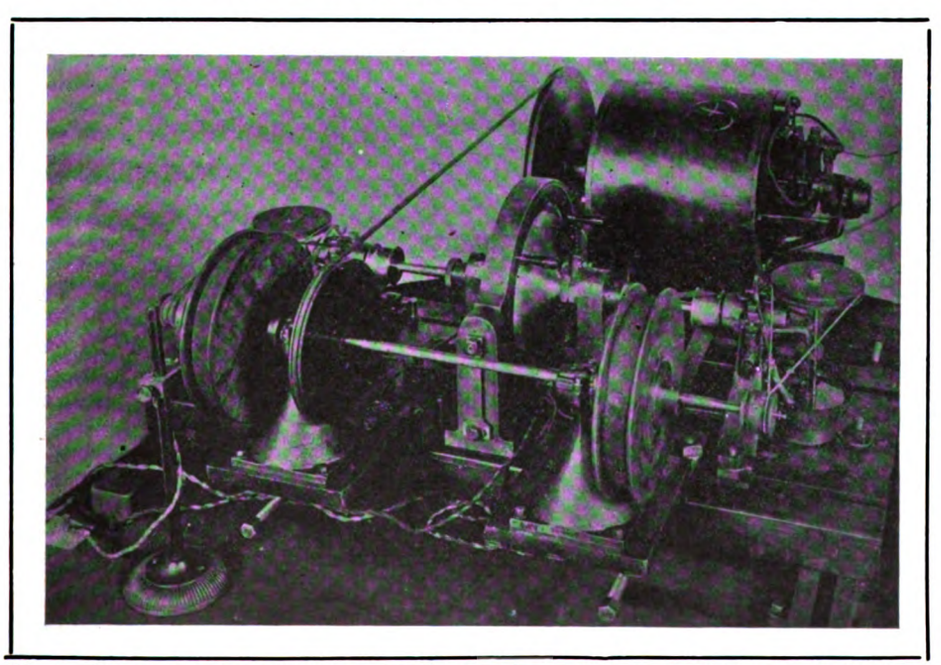

Fig. 4. Close-range view of alternator normally run at a speed to give from 50,000 to 60,000 cycles.

(To be continued.)

IOWA TELEPHONE MEN PLAN TO EDUCATE PEOPLE OF THE STATE BY STEREOPTICON LECTURES.

A PLAN for the education of the people of the State to a proper appreciation of the success of Independent telephone companies is being worked out by members of the Independent Telephone Association of Iowa. C. H. Smith, Chairman of the Program Committee for the Convention which is to be held at Sioux Falls during March, with George T. Hewes, Manager of the Independent Telephone Clearing House, and other prominent Independent telephone men of the State, are working vigorously to gather material for these lectures. For illustrations they are obtaining photographs of exchange buildings, and are requesting contributors of these views to give data covering the approximate number of employees, subscribers, etc. Manufacturers have also been invited to contribute photographs of their buildings, and interiors of their establishments, with a twenty-five word description for each view. Each manufacturer is requested to contribute views of what he considers the two most important features of his plant.

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Cartoons are being gathered from all available sources, and from them and the photographs lantern slides will be prepared. From the data gathered a lecture is to be made up in time for its first delivery at the coming Convention, in order to show the magnitude of Independent development throughout the country. Subsequently the lecture will be repeated at District Association meetings and on appropriate occasions in various important places throughout the State.

The value of such a lecture at a time when a franchise is being considered, for instance, cannot be overestimated. The members of the association who are working on this matter are anxious to obtain material from the best sources, and contributions from telephone operating companies and manufacturers to this work will be decidedly helpful to the progress of Independent telephony in Iowa. The time is so limited before the first lecture that those who are willing to co-operate with the Iowa Association should take advantage of the opportunity at the earliest possible moment. Contributions may be sent to C. H. Smith, Chairman of the Program Committee, care Independent Clearing House, Des Moines, Ia.

Pending Legislation Affecting Telephone Companies

IN the legislatures of many states during the present term there have been presented measures affecting the interests of telephone companies. The substance of a number of bills dealing with regulation shows a marked similarity in the acts proposed in a number of states, as may be seen from an examination of the following summary of the most important now under consideration.

IDAHO LEGISLATURE TO MAKE FRANKING OF TELEPHONE MESSAGES ILLEGAL.

IN a bill recently introduced in the Legislature of the State of Idaho telephone companies are classed with railroad and telegraph companies by provisions which forbid them to give service without compensation. The bill not only prohibits the indiscriminate giving out of franks, but prohibits the interchange of passes and franks for the use of officers and employees of the companies mentioned in the act, so that it will be illegal for a telephone company to exchange franks for railroad passes. It is provided that jurisdiction for offenses committed under the provisions of the act shall extend to any county of the State where the fault is committed.

MISSOURI LEGISLATURE ATTEMPTS TO REGULATE TELEPHONE RATES.

A BILL recently introduced in the General Assembly of the State of Missouri provides that it shall be unlawful for any telephone company or any person or corporation controlling a telephone line which does business in that State to charge rates higher than $5 per month for business and $1 per month for residence service. The bill also provides that the limiting rate for long distance service between the hours of 6 A. M. and 6 P. M. shall be 20 cents for the first fifty miles or fraction thereof and an additional sum of 5 cents for each additional fifty miles or fraction thereof for each connection. It is provided that the night rate shall not exceed one-half the amount charged for day service.

SOUTH DAKOTA SENATE CONSIDERING MUNICIPAL OWNERSHIP TELEPHONE MEASURE.

IN the Senate of South Dakota a bill has been introduced by Mr. Jenkins which provides that the city council of any city in the State shall have power to acquire, construct, equip, maintain and operate a telephone system.

SOUTH DAKOTA SENATOR WISHES TO MAKE TELEPHONE COMPANIES COMMON CARRIERS.

SENATE Bill No. 8, introduced by Mr. Englesby in the Legislature of South Dakota, provides that all persons, partnerships or corporations carrying on a telephone business shall be common carriers, and as far as applicable the laws regulating the transportation of property by railroad companies shall apply with equal force to telephone companies. A further provision of the act is that the Railroad Commissioners of the State shall have general supervision over telephone companies, with power to inquire into complaints, unjust discriminations, neglect and violation of laws, etc.; and that these Commissioners shall have power to fix a scale of reasonable maximum rates. The bill further provides that the duty of the Board of Railroad Commissioners shall be to order all organizations engaged in the telephone business to make connections with all other concerns operating a telephone business in the same town, the apportionment of the expense of such connection to be regulated by the orders of the Commission. Penalty for a violation of the Act is fixed at a minimum fine of $1,000, or imprisonment for a minimum period of one year.

KANSAS LEGISLATURE CONSIDERS AN ACT RELATING TO TAXES OF MUTUAL COMPANIES.

HOUSE bill No. 120, introduced in the Legislature of the State of Kansas, provides that all property of Mutual Telephone Companies operating lines in the State shall be assessed by the township and city assessors when Mutual Telephone lines are found within the limits of their townships and cities. In determining the value of such property the assessors are directed to be guided by the value placed on other property in their respective townships or cities. The bill has been referred to the Committee on Assessments and Tax for consideration.

KANSAS FOLLOWS MISSOURI IN ATTEMPT TO FORCE INTERCONNECTION OF COMPETING TELEPHONE LINES.

SENATOR NOFTZGER has introduced in the Senate of the State of Kansas a bill by the terms of which telephone lines are declared to be common carriers, subject to the supervision of the State Board of Railroad Commissioners. In the second section of the bill it is provided that it shall be the duty of all telephone companies having central offices in the same city, town or village to connect them with every other central office in the same town, so that patrons of each telephone line may have, upon request, connection with all other telephone users.

AN ACT EMPOWERING THE STATE RAILWAY COMMISSION TO REGULATE TELEPHONE RATES AND SERVICE IN NEBRASKA.

IN Senate Bill No. 31, introduced in the present session of the Legislature of Nebraska, telephone and telegraph companies are included with railways in a provision imposing upon the Street Railway Commission the duty of regulating rates for service.

SOUTH DAKOTA TAKES UP COMPULSORY PROVISION OF TELEPHONE SERVICE AT RAILROAD STATIONS.

TO make it the duty of every railroad company having a ticket office, or freight office, in a city or town where there are one or more public telephone exchanges to constantly maintain in each office a telephone connection with all the exchanges is the object of Senate Bill No. 46, introduced in the Legislature of the State of South Dakota. It is provided that a railway company shall use the telephone installed in accordance with this act for the giving of prompt and accurate replies to all reasonable and proper inquiries concerning the passenger and freight service of the railroad received over such lines during

(*Continued on page 60.*)

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The Convention of the Wisconsin Association

MEMBERS of the Independent Telephone Association of Wisconsin came together for the discussion of matters of common interest, at Madison, on January 16 and 17. The meeting was called to order at 2:30 P. M. on January 16, and the delegates from the various Independent telephone companies in the State were welcomed by Mayor Schubert in a very pleasing speech, which was much appreciated. President Valentine's address was then delivered. He gave a statement of the conditions in Wisconsin, showing the progress made in the past year, and explained the object of President H. D. Critchfield, of the Milwaukee Independent Telephone Company and Wisconsin Independent Long Distance Telephone Company, in attending the meeting prepared to make detailed plans for co-operating with the various companies in building up a long distance toll system throughout the State. President Valentine also explained the litigation being carried on to enforce the discrimination rate bill passed by the last Legislature, and was followed by Attorney F. C. Grant, of Janesville, who was the attorney of record in the matter, on the legal status of the bill.

It will be recalled that the effect of this statute was intended to be to compel all telephone companies to charge a like rate in all cities of the same class. The cities of the State are divided into classes according to population and in those of any one class the rates must be the same. The Bell company of Wisconsin has disregarded this law and begun discriminations in Janesville which has resulted in an action in the courts brought in the name of the State. The Bell company has retained an able corps of lawyers and hopes to have the law declared unconstitutional by the courts. The tendency of the Bell company, as indicated by the evidence presented, is to charge lower rates in a city where an Independent company exists, in the hope of bankrupting the competing public service concern. Money has been raised by the members of the Association to aid the people to sustain their rights in the courts in a way which will assure to the members of the Association an opportunity to compete on fairer terms than are obtainable when their opponent can juggle rates to meet each local situation.

Richard Valentine.

Mr. J. B. Ware, secretary of the Michigan State Independent Telephone Association, spoke of the rapid growth which has been made by the Independent companies in Michigan, and told of the referendum elections in Canada, where a large majority of the municipalities voted to install long distance lines and exchanges under municipal ownership. Mr. Ware also explained the very successful operation of the Michigan Independent telephone clearinghouse, under the supervision of the Traffic Association.

At the evening session Mr. Critchfield arrived from Milwaukee, and presented the intentions of both the Milwaukee Independent Telephone Company and the Wisconsin Independent Long Distance Telephone Company for 1907, announcing that the long distance company was ready to take contracts at once for long distance connections with lines which would be immediately constructed. Members afterward listened to a much appreciated address on district organization by Mr. C. S. Norton, secretary of the State Association of Indiana. Before closing this first session, on motion, those present representing each Congressional District of the State were instructed to decide on their representative for each of the committees on the clearing house, district organization, nominations, and the committee on membership, and be prepared to hand in the names by 9 A. M. of the 17th.

On January 17, as soon as the meeting was called to order, a resolution was presented by Mr. Critchfield, and adopted, as follows:

Resolved, That this Association amend its constitution and by-laws so as to allow all individuals that are interested with the Independent telephone companies of the State of Wisconsin to become members of the Independent Telephone Association of Wisconsin when recommended by the executive committee.

Mr. Norton, of Indiana, very ably explained the formation and operation of the Indiana State Association, and Mr. Ware, of Michigan, also explained the formation of the State Association in Michigan.

At the opening of the afternoon session Mr. James B. Hoge, of Cleveland, president of the International Independent Telephone Association, addressed the convention until the departure of his train. He told of the growing use of the telephone and the rapid development of the Independent telephone companies throughout the country.

Following the address by President Hoge, Mr. J. C. Harper, of Madison, chairman of the committee on district organization, presented the following report:

1st. We invite and urge every Independent telephone company of the State to at once affiliate with this, The Independent Telephone Association of Wisconsin.

2d. We recommend the immediate organization by Congressional districts of all Independent companies.

3d. We recommend that within thirty days members in each district meet in convention, and effect a temporary organization with a view of making it permanent at the time of the adjourned meeting of the State Association; each district convention to adjourn its said convention and reconvene at the said State meeting.

4th. We recommend the securing at once of a State organizer to work under the State Association and assist the officers of the districts, in order that quick and effective district organization may be completed.

5th. We further recommend that the State Association raise and appropriate the sum of $2,000 to pay the expense, or such portion thereof as is necessary, to complete the organization of districts as outlined.

6th. We recommend that each district chairman call said convention at such time as the State Association officers may designate, that the organizer and other leaders may be present at all in order to secure uniform action as far as possible.

Remarks were then made by several members on the report, which was adopted. The committee on organization was then empowered to collect $2,000 in a manner aside from dues or assessments on the members.

The committee on nominations announced that its report would be made at the adjourned meeting of the Association and the committee was ordered continued.

The committee on the clearing house reported as follows:

"Your committee on a clearing house begs leave to submit the following: That, after considerable talk with Mr. Norton, of Indiana, we find that we favor the idea of a clearing house for the handling of long-distance or toll line business, the same to be of mutual origin, consisting of the different companies, but the form and conditions of such origin cannot be perfected without much work and forethought. There not being time for such work, we ask to have your committee on organization instructed to appoint a clearing house committee of three, and that the State organizer be one of that committee to take up the matter."

This report was adopted. The committee on membership reported a recommendation that the membership fee be reduced to $2 and the annual assessment be not more than one cent for each telephone operated by the company and one cent for each unit of toll line. The committee was ordered continued until the adjourned State meeting and that a committee of three be appointed on amendments to the constitution, to report at the

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adjourned meeting. The chair appointed on this committee Messrs. Critchfield, Harper and Goodrich. After much discussion, the convention was adjourned to meet on March 7th, and 8th in the same hall if possible, at Madison, Wisconsin.

A hearty vote of thanks was tendered the Dane County Telephone Company for the use of Turner Hall, in which the convention was held. Voluntary subscriptions of several hundreds of dollars were collected in a short time and handed to the secretary for the purpose of defraying the expenses of the district organization, and the meeting was adjourned to meet on March 7th and 8th, 1907.

H. D. Critchfield.

Among those present were men from all over the state, including the following: W. F. Goodrich, La Crosse; J. G. Schweitzer, La Cross; E. J. Kneen, Bangor; George Byer, Westby; B. J. Anderson, Sun Prairie; J. C. Harper, Madison; O. O. Hougan, Stoughton; Andrew Lee, Westby; Dr. George M. Hiderschide Arcadia; H. R. Ritter, Madison; Charles Schernecker, Sun Prairie; Walter Drake, Black Earth; Clarence Jordalen, Kegonsa; B. Bartlett, Chippewa Falls; O. A. Spencer, Bloomer; H. B. Grieve, Kiel; A. A. Paulson, Kiel; E. I. Bates, Chippewa Falls; D. L. Bestor, Mazomanie; Jos. F. Fuist, Cross Plains; F. E. Mainwaring. Gotham; H. C. Winter, Madison; A. W. Larson, Amberg; H. Tesdale, Sparta; M. G. Williams; Sparta; C. M. Beebe, Sparta; George Barnum, Juda; H. L. Thompson, Madison; John M. Baer, Appleton; F. C. Grant, Janesville; Earl E. Miller, Iron River; A. N. Crosby, South Wayne; F. A. Cole, Orfordville; O. P. Gaarder, Orfordville; W. J. Bell, Deerfield; C. P. Goodrich, Fort Atkinson; H. H. Moehlengah. Clinton; John S. Donald, Mount Vernon; Frank G. Moore, Mount Vernon; F. J. Kimball, Briggsville; W. P. Hyland, Ashland; John O. Thomas, Franksville; E. H. Wells, Milton; Edward Cleary, Antigo; William Van Middlesworth, Racine; J. A. Murray, Baraboo; W. T. Sparks, Lodi; J. U. Schmidt, Prairie du Sac; C. F. Lamboley, Prairie du Sac; Fred M. Cole, Ashland; W. Tasher, Mount Vernon; E. C. Koch, Mount Vernon; F. W. Hoyt, Madison; A. C. Hoppmann, Madison; Mrs. H. C. Hackney, Delevan; Ole Fortney, Gay's Mills; W. R. Chipman, Morrisonville; L. A. Goebel, Mount Horeb; P. B. Knox. Madison; Matt Statz, Madison; John C. Niel, Waunakee.

From 125 to 150 telephone men, representing over sixty different companies were in attendance. Fifteen supply houses and manufacturers were represented.

The convention was followed by a banquet held at 8:30 P. M. at the Capital House, which was largely attended. Among the principal speakers were: J. B. Ware, of Grand Rapids; Francis C. Grant, Janesville; Mayor J. C. Schubert, Madison, and C. S. Norton, of Indianapolis, Ind. J. J. Nate, of Minneapolis, was toastmaster.

The result of this convention has been to make all companies represented look forward with increased enthusiasm to the time when they shall be as closely affiliated in their actual operating relations as they now are in plans for mutual helpfulness. This will come as an early and inevitable result of the building of the long distance lines discussed at this meeting.

Independent Executive Committee Plans for Association's Advancement

AT Cleveland, Ohio, on Jan. 7, 1907, C. W. Kline, Hazelton, Pa.; Frank L. Beam, Columbus, Ohio; M. B. Overly, Louisville, Ky.; Chas. S. Norton, Indianapolis, representing A. C. Lindemuth, Richmond, members of the Executive Committee of the International Ind. Tel. Ass'n, came together with President Jas. B. Hoge in the chair, and J. A. Harney, assistant secretary of the association, acting as secretary. The following gentlemen were also in attendance: Chas. E. Sumner, Portland, Ore.; J. G. Splane, Pittsburg, Pa.; W. B. Woodbury, Detroit, Mich.; Robert C. Hall, Pittsburg, Pa.; C. Y. McVey, Cleveland; Jas. S. Brailey, Jr., Toledo; E. W. Moore, Cleveland. The chairman read communications from other representatives of important operating companies who had been invited, regretting their inability to attend, and assuring the association of their support.

The secretary read a report on the present condition and needs of the association, which was discussed by the members present. After this discussion the following resolution was presented, and, upon motion duly seconded, was unanimously adopted:

Whereas, It is the sense of this committee that we undertake to raise $25,000 for the use of the International Independent Telephone Association in its general work of advancing the cause of Independent telephony; and,

Whereas, the work which the association has been doing, and contemplates continuing along broader lines with the money raised will help all of the interests in the field, and will be of particular benefit to the manufacturers of and dealers in Independent equipment and apparatus, including all kinds of supplies and accessories, by making a better market for such goods, and will also be of great assistance to engineering and construction firms by creating a greater demand for their services; therefore, be it

Resolved, that the president of this association be, and he hereby is, authorized and instructed to collect as promptly as possible all the unpaid assessments from State associations and to solicit from Independent manufacturers, supply dealers, engineering and construction firms, etc., as above mentioned, contributions to this fund of $25,000; and be it also

Resolved, that the president is authorized to use his own discretion as to the best method of securing these contributions and to select individuals or appoint committees as he deems it necessary to help in this work. Be it further.

Resolved, that State and other Independent associations, Independent companies, manufacturing and other firms above mentioned, and all in the field be urged to give the president, and those whom he may appoint to assist him, their hearty support in raising this fund.

It was moved and seconded that an informal meeting of the Officers and Executive Committee be held in Chicago, January 16th, at the Auditorium Hotel, and that State Presidents and Secretaries, with representatives of operating companies, including those present and all who might be in Chicago attending the Electrical Show, be invited to be present, the object of this meeting being to perfect arrangements for raising the fund of $25,000, and to consider other matters.

Other matters came up for discussion with a view to providing funds for development.

Suggestions looking to a broadening of the work of the association caused the committee to pass a resolution providing for honorary membership at an annual subscription of $25.00, to which all individuals interested in Independent telephony would be eligible upon approval of Executive Committee.

The resolution upon motion was unanimously adopted and all present subscribed for membership.

A resolution was also adopted, authorizing the president to publish an official bulletin for the purpose of keeping in closer touch with all of the interests in the field and to issue it not later than April 1st, and as often thereafter as desirable. This

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bulletin is to be sent to all operating companies and others interested in the field, and is to contain the names of honorary members and contributors to the association, the details being left to the president.

After considering the names of all cities desirous of entertaining the 1907 convention, Chicago was selected as being the most desirable site, on account of its central location and especially on account of the present conditions there. The date selected, subject to approval, was the 4th, 5th and 6th of June. The president was authorized to make necessary arrangements for proper publicity, at this convention.

This gathering of so many prominent telephone men connected with Independent companies has been the occasion of widespread newspaper comment throughout the country, and various purposes have been attributed to the representatives. In newspaper reports which are authorized by the association, however, are statements from President Hoge saying that the meeting has no significance with regard to any merger of principal Independents, as has been widely reported, but is, as the Independent companies are generally well aware, for the purpose of taking steps to make the organization stronger for the mutual advantage of all its members. President Hoge also directed the attention of the newspaper men to the fact that since the last executive meeting was held in Chicago, important franchises have been granted to Independent people in various parts of the country, notably Omaha, Denver, Milwaukee and Boston, in spite of the determined fight against competition made by the Bell Company. The result of the election in Manitoba was also referred to as an important defeat for the Bell interests.

W. B. Woodbury, of Detroit, spoke of the plans of the Home Telephone Company, of which he is general manager, and said that as the result of the work of the past six months there are now four steel buildings in the course of construction; half of the local pole lines in Detroit are up; about one-third of the conduit system is completed and messenger and line wires are being strung at the present time on completed pole lines.

In addition to the local work, the company has built 300 miles of toll lines, carrying about 4,000 miles of circuit. The company will connect with all important Independent plants in Michigan, Indiana and Ohio. At present over 9,100 first-class contracts have been signed, and the company expects to begin operations during the latter part of this year with 15,000 subscribers. The property is fully financed, all money that is required being at the company's immediate disposal at the present time.

Senator Kline, who is vice-president of the Consolidated Telephone Companies of Pennsylvania, and is also interested in the Interstate Telephone & Telegraph Company, of Trenton, N. J., and other places, spoke of the steady development in Pennsylvania and in parts of New Jersey.

J. G. Splane, of Pittsburgh, told of the large demand for toll line service, which is heavily taxing the facilities of his company, although he now has traffic arrangements which give him connections with Ohio, Indiana, New York, West Virginia, Missouri and Kansas.

Charles E. Sumner gave enthusiastic reports of the development on the Pacific Coast, stating that the companies now organized and financed with Pacific Coast capital are building exchanges and long distance lines throughout Oregon and Washington, and will spend several million dollars before the end of the year. In Portland, Oregon, the exchange is almost completed, and the work is making good progress in Spokane, Walla Walla, Tacoma, Birmingham and other cities throughout the two States. Seattle, where the Independent plant already has 10,000 telephones in operation, is gaining rapidly.

Ed. L. Barber, vice-president and general manager of the Independent Telephone Company of Chicago, predicted that Independent companies of the country would have connections with Chicago subscribers within a few months. He said that all the capital needed for the development of an Independent system in Chicago is already at the company's disposal. Cleveland, with its important long distance lines, will be given connection with Chicago over the lines of the United States Telephone Company by way of Fort Wayne, and direct lines will run to Milwaukee, Omaha, Kansas City and St. Louis. Connections will be made via Pittsburgh and other eastern points over the lines of the United States Telephone Company. Long distance companies in cities surrounding Chicago are pushing their construction rapidly, in order that they may be able to make connections at the proper time. Mr. Barber called attention to the fact that with Independents occupying strong positions in Chicago, Milwaukee and Omaha, the Bell company would find itself unable to advance any claims of exclusive connections in the middle west.

F. L. Beam referred to the situation in Ohio, and said that the State association, of which he is president, has just finished tabulating reports from various counties which show a gain of over 21,000 telephones during the past six months, the total number being at present 269,220. Mr. Beam has found in the many parts of the state which he has visited in connection with his duties, that Independent companies are in a strong financial condition, and the majority of them paying satisfactory dividends on their stock. Much construction is being done, and toll line development, which has been very extensive during the past year, will be continued on an even larger scale. Extensive switching stations at Bucyrus, Ohio, are now being installed by the United States Telephone Company. This will give Independent exchanges in western and central Ohio facilities to more than double their present capacity for handling the rapidly increasing long distance business.

Mr. M. B. Overly, formerly general manager of the United States Telephone Company, and now holding a similar position with the Central Home Telephone Company, of Louisville, spoke of the work in the South. This company has taken over many Independent exchanges and long distance lines in southern Indiana, Kentucky, Mississippi and Tennessee. Among its other projects it is building heavy copper toll lines through to the Gulf of Mexico. The line is now completed as far as Birmingham, Ala., and rights of way have been secured for the rest of the distance. Mr. Overly is president of the Kentucky Independent Telephone Association, and states that every company in that state is in a prosperous condition, and prospects for all of them during the coming year are exceptionally good.

Charles S. Norton referred especially to the large amount of toll line business which has been carried on in Indiana during the past year. Figures obtained by him in a recent canvass of the state show that there are 187,488 telephones connected with Independent lines, and only about 62,219 connected with the Bell system, including sublicensees.

At the informal meeting of Independent telephone men, called by the Executive Committee of the International Association, the following gentlemen met in the Auditorium Hotel, Chicago, on January 16th: Jas. B. Hoge, Cleveland; Jas. S. Brailey, Jr., Toledo; A. L. Têtu, Indianapolis; W. C. Polk, Chicago; C. Y. McVey, Cleveland; C. E. Tarte, Grand Rapids; Frank H. Woods, Lincoln, Neb.; W. H. McDonough, New York; H. B. McMeal, Chicago; Chas. S. Norton, Indianapolis; W. B. Woodbury, Detroit; Max Koehler, St. Louis; W. J. Stadelman, Kearney, Neb.; J. P. Boylan, Cleveland; Hugo Koehler, St. Louis; J. A. Harney, Cleveland.

The meeting was called to order by President Jas. B. Hoge. Assistant Secretary J. A. Harney, acting as secretary. Communications from gentlemen who could not attend were read, and the chair then appointed the following committees to make the best arrangements possible for holding the annual convention in Chicago June 4th, 5th and 6th, or to see whether it would be advisable to change the place or time, with instructions to report promptly to him: H. B. McMeal, W. B. Woodbury and J. A. Harney.

The chair, in a brief discourse, pointed out the work being done by the association, its value to the Independent interests, and the importance of continuing it along broader lines. Concrete examples were given of the recognition of the Independent move-

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THE EDITOR'S PAGE

COMPULSORY LOCAL INTERCONNECTION.

LEGISLATORS in a number of States are, during the present term, showing their appreciation of the importance to the public of a well developed telephone service by the introduction of measures the object of which is to compel the interconnection of competing exchanges located in the same town or city. The immediate result of the passage of such an act, should it be sustained in the courts, would be of course to enable any telephone user to obtain direct connection with any other subscriber for telephone service, irrespective of the ownership of the instruments and lines which form the medium of communication. Such a result, at first glance, and especially to a person not thoroughly familiar with the history and present state of telephone development, would seem to confer upon the people at large important benefits, which would warrant the most vigorous attempts to enact the proposed measures into laws. Like many other beautiful conceptions of a hasty imagination, however, it has numerous flaws which would be developed rapidly if once the plan were put in operation

So far there has been more or less talk of holding telephone companies to the same conditions as compel a railroad, as a common carrier under the law, to forward business received from another line. Passing over many of the arguments for and against the proposition along this line as more sentimental than practical, it can do no harm to base any consideration of the subject upon the immediately essential things, such as the effect a compulsory measure of this nature would have upon telephone operation and development, the two things which, aside from rates, form the only serious concern of the user of telephone service.

In the matter of operation there are difficulties which remind us of the arguments so widely distributed by certain press bureaus, harping on the evils of so-called telephone duplication. There would be the inevitable necessity for every telephone user desirous of utilizing the facilities afforded under the act to possess himself of a directory of both companies, even though he might use the instrument of but one. Confusion and delay would result in connection with many calls, and more particularly when these should happen to be of a special nature. Those involving reference to an information operator, pay station calls, the handling of requests for a line found to be busy, and many other forms of special service usually performed by telephone companies would be likely to be carried on with an impeded efficiency which would probably lead to a series of detailed annoyances tending to harass the telephone user to the point of continual dissatisfaction with his service. Those in favor of the measure contend that such things are mere matters of detail, the disadvantages of which could be overcome by an efficient management, if adequate pressure were brought to bear. Telephone men, however, have been for years trying to reduce the frequency of such operating troubles to a minimum, and the best of operating men are willing to admit that the conditions which have been obtained up to the present time are very far from ideal. Anything which will act in the way of a compulsory setback is looked upon with the utmost disfavor by them, and their opinion would soon be confirmed by the increased protests of their subscribers. This might be reckoned upon even with the heartiest cooperation of the employees of the interconnecting exchanges in carrying out the spirit of such a law as has been proposed. That such cooperation in business matters might be expected between the members of organizations which are engaged in so determined a competitive struggle as are the telephone companies is a little beyond the stretch of a reasonable man's imagination.

In relation to its influence upon development lies perhaps the most important disadvantage of the laws as planned. Wherever any one man, or any body of men, has made anything like a thorough and impartial investigation of telephone development in localities where competing systems have been in healthy existence for any considerable length of time, the conclusion has been drawn that the race for business on the part of the respective organizations has brought about an acceleration of the rate of progress. People have had their attention constantly drawn, by one device or another, to the value of the telephone service, and so in increasing numbers have made arrangements to secure its benefits for themselves. Yet, rapid as has been development under such conditions during the past two or three years, there are broad indications that it will continue with equal force for some time to come. A telephone system, up to a certain point, may be likened to a snowball rolling down hill. It gathers material over a constantly increasing surface, and gains in speed at an increasing rate for every advance, and the combined effect is to mightily increase its momentum.

That this momentum of telephone development is a good thing for a community has come to be admitted wherever it really exists. People are coming to look upon telephone service as a necessity to no less a degree than are the public light and water services. A few years ago these latter were thought by many to be luxuries. The telephone is passing through the same testing period as the other services, and will soon achieve the same standing. The value to the individual is increased with the completeness of the system. Inasmuch as the struggle for business under a state of competition is the chief factor in hastening development to that stage where we may have a really complete system of communication, with a terminal in every residence or place of business, it would appear to be contrary to the public interest, from the broadest point of view, to interpose any unnecessary check in the path of such free competition until the attainment of the highest state of development under its stimulating influence.

Rather deceptive are some of the published statements from officials of Bell companies in States where such a measure has been proposed. Although their strength lies in their toll lines, and their local development is inferior to that of their Independent opponents, they claim to oppose such an arrangement. Misled by such loud talk, and perhaps seeing an easy way to the use of toll lines which it would cost much money to build, many Independent companies favor such a measure. Before pledging their support it would be well for them to examine the condition of some of their neighboring companies who are sub-licensees, and see how great a proportion of profit goes with the control of the toll lines. Then, as even the State laws could not change such control, it would appear wise for the Independent telephone men to consider very carefully whether they are willing to see a law upon their statute books which will give to their opponent, equipped with long distance lines, all the advantages of connection with their well developed local exchanges. Should an Independent company think this a condition which it would be for its advantage to assume, there is no need of going through the roundabout device of bringing it about by statutory compulsion. It should not be hard for a company to enter into a sub-license contract when the Bell companies keep their best paid agents in the field for the purpose of bringing small organizations into this restful haven of inactivity.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

DUTY OF CONNECTING COMPANY TO ACCEPT MESSAGES.

I wish you would answer my questions in The Telephone In The Courts as soon as possible. We have a contract with the Home Telephone Company as follows, in part of which we are second party: All subscribers of the second party and all Mutual telephone companies transacting business over the lines of second party shall have the same toll line privileges as the subscribers of the Home Telephone Company.

We are a Mutual Telephone Company, but we have a contract to build our lines to the incorporation and they to meet us there from their switchboard, we to pay them at this rate: $.50 for one subscriber to the line, for two to four, $.30, five or more $.25 each. But they refuse to give the telephone companies coming to us any toll line services as you see they agreed to.

The contract is signed by their president and secretary, and by our trustees who are doing our business. We are incorporated without profit. The rest of their contract they make good. We have kept our share to the letter. We have use of over four thousand Mutual telephones, and so do their subscribers, as they have free use of our toll lines. But they will not give toll line privileges for our Mutual friends coming to us as they agreed. What can be done in this case? Are not toll lines and all telephone exchanges common carriers according to law in this State?

M. TEL. CO.

YOU are correct in supposing that toll lines and all telephones exchanges are common carriers according to the law of Ohio. If the company with which you have made the contract refuses to give toll line privileges to your subscribers or to your connecting lines, you may compel it to do so by mandamus or may recover damages from it for its failure to carry out its agreement. It is as much the duty of a connecting company to accept all messages tendered it as it is for the initial company to accept them. This duty is attempted to be enforced by statute in the State of New York, but the statute is merely declaratory of the common law duty owed by all companies so that the absence of a statute in Ohio makes no difference. The company's contract is in accordance with the common law, so that you are in a position to insist that the company carry out its engagement with you and your Mutual friends.

U. S. Tel. Co. vs. W. U. T. Tel. Co., 56 Barb (N. Y.) 46; Baldwin vs. U. S. Tel. Co. 6 A. B. B. Pr. N. S. (N. Y.) 406; Jones on Telegraph and Telephone Company, section 456.

LOS ANGELES RATE CASE.

A VERY important rate case in which the Home Telephone Company is complainant and the city of Los Angeles is defendant is pending in the Circuit Court of that city.

The principle involved is as to whether or not the city has a right under its charter to fix telephone rates by ordinance and whether the section of the city charter placing this power in the hands of the city council is valid. Under Section 31 of the city charter the council has fixed telephone rates. This section provides that each December the council shall demand of the telephone companies a statement of the business done for the year and that on this basis the rates for the ensuing year shall be fixed.

A suit to restrain the city from enforcing its demands was filed in the United States Circuit Court by the Home Telephone Company. The city filed a demurrer, claiming that the telephone company has not sufficient cause for action.

The telephone company contends that its franchise, when granted in 1902, provided the rates to be charged for the use of telephones and that this is in legal effect a contract between the city and the company; that the city council has no right or power to interfere with or prescribe different rates or any rates whatever other than those set forth in the contract.

As there has been no change in the amounts under the action of the city council the importance of the contention lies not so much at present in the financial advantage to the user as it does in the determination of the point whether the power to fix rates is within the jurisdiction of the city council.

Counsel for the city contends that under Section 31 of the city charter the council can fix rates and that this power cannot be abrogated or bartered away by franchise, contract or any other means; that this power is inherent with the council, existing before the granting of the franchise, and that the granting of this particular franchise in no way affects such powers. He also claims that the rates fixed in the franchise were simply maximum rates, placing on the telephone company a limitation as to the prices that could be charged, and that it did not bind the city under a contract to maintain the payment to the company of this maximum rate.

OMITTING NAME FROM DIRECTORY SAID TO HAVE CAUSED NOVEL DAMAGES.

A NOVEL suit has been instituted in Atlanta against the Southern Bell Telephone Company by M. C. Kiser and A. B. Green, known as the M. C. Kiser Brokerage Company. The plaintiffs ask damages to the extent of $1,000, alleging that their firm name was omitted in a new telephone directory issued by the Bell people, and that thereby the plaintiffs could not be notified by the Southern Railway Company that a car load of apples had arrived. They also allege that the apples were not received by the plaintiffs until the market was congested and profits on sales thereby greatly reduced or altogether destroyed.

GEORGIA OCCUPATION TAX UNCONSTITUTIONAL.

IT is declared that the State of Georgia will lose $30,000 and incidentally a sum that would have amounted to $150,000 by the affirming of a decision of Judge Pendleton of the Fulton Superior Court at Atlanta, granting an injunction against the State Comptroller General to prevent him from collecting from the Southern Bell Telephone Company certain taxes. The decision holds that the "occupation tax" of the State is unconstitutional. The Supreme Court has so decided in a test case brought by the comptroller general to compel the payment of this tax which is such a per centum on gross receipts as would equal 2½ per cent. on the gross receipts when added to the ad valorem taxes. The opinion says that the above rule is lacking in uniformity and is invalid. Owing to the adverse decision, Comptroller General Wright will recommend to the legislature the enactment of a new law on this subject which will avoid the constitutional inhibition.

COIN RECEIVING TELEPHONES TO BE TAXED IN MISSOURI.

A BILL calling for a $2 tax on all slot machines, telephones included, has been passed by the House of Delegates at St. Louis, Mo.

The Bell Telephone Company opposed the measure because, under its franchise, it pays 5 per cent. of the gross earnings of the company to the city, which amounts to $60,000 per annum, and it claimed the additional tax would be a burden.

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INDEPENDENT EXECUTIVE COMMITTEE PLANS FOR ASSOCIATION'S ADVANCEMENT.

(*Continued from page 55.*)

ment among the press of the country and the value of proper publicity. The special work being done by the association along this line was described, including the preparation of a comprehensive write-up of the Independent system for the Boston *Commercial*. A general discussion followed, and all present declared themselves in sympathy with the association's work and aims and in favor of the plans proposed for securing financial assistance required.

It was unanimously voted that the association create a membership for the Independent manufacturers, jobbers and supply dealers, concerns securing such membership to pay to the association, as annual dues, one-twentieth of one per cent of the gross amount of their business transacted during the preceding year with the Independent telephone people. All details, including issuing membership cards, etc., were left to the executive officers of the association.

Mr. H. B. McMeal, president of the Telephony Publishing Company, and Mr. W. H. McDonough, president of THE AMERICAN TELEPHONE JOURNAL, on behalf of their respective companies asked to have them included in such membership, saying they would be glad to assist in the association's work by contributing the annual dues on the basis proposed.

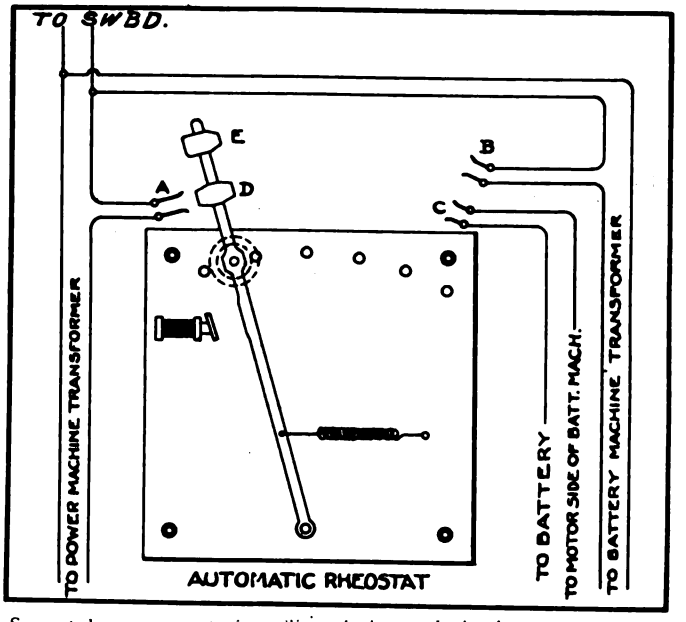
Mr. McMeal, secretary of the Manufacturers' Association, on behalf of that organization, extended an invitation to representatives of the International Association to be present at the Manufacturers' meeting to be held in Chicago, January 22, 1907. Selection of this committee was left to the chairman.

A REGULATING DEVICE FOR RINGING CIRCUITS IN TELEPHONE EXCHANGES.

By F. C. GREENWALD.

IT may happen, owing to some trouble at an electric light plant or other point, that the pressure on the mains which supply power to a ringing motor at the telephone exchange may be temporarily lowered or cut out entirely. This invariably allows the starting box lever of the motor to drop back to the starting position. The machine naturally comes to rest and does not start when the current again appears on the mains, thereby cutting off the ringing power from the switchboard until the wire chief can restart the machine. At night this may cause considerable delay in the service, as it may be difficult or impossible to notify the wire chief of the disabled condition of the plant.

A scheme was lately seen in use which was calculated to offset the annoyance which might be caused in this manner by the failure of the electric light circuit. Upon the starting lever on the rear of the rheostat were affixed two blocks of copper insulated from the lever and from each other. These blocks, when the lever was in starting position, connected two sets of springs,



Suggested arrangement of auxiliary devices and circuits on motor starting box.

thereby closing the circuit of the machine run by storage battery current. One of the copper blocks, when electric light current held the lever against the magnet of the starting box, closed the alternating current lead from the power machine to the switchboard; consequently when the lever left the magnet this latter circuit was opened, thus making it impossible for a winding of the power machine transformer to be across the leads to the switchboard while the battery machine transformer or pole changer might be supplying current.

Telephone Exhibits at the Chicago Electrical Show

THE large number and varied character of the exhibits of supplies and apparatus used by telephone companies were most striking features of this year's Electrical Show at Chicago, which has just closed. The exhibits were of a size, and displayed with an attractiveness, which showed that the individual firms are fully prepared to do their part in the development of what has become one of the most important of the electrical industries. Those who attended the show a year ago were in many cases surprised at the progress which has been made in the designs and manufacture of material and apparatus.

Prominent among the exhibits were those of many firms well known to buyers of telephone supplies. A summary of the leading exhibits may be given as follows:

THE PEIRCE SPECIALTY CO., Chicago, Ill., had an interesting and representative exhibit, the frame work of their booth being composed of channel and angle iron of the various sizes used in the manufacture of their different specialties. On these steel side pieces were mounted the well known 2-point Peirce brackets In the center of the exhibit was a 15 foot pole on which was mounted a 48 pr. Peirce distributing ring, from the points of which were wires leading to the brackets around the side walls, each pair of wires bearing a number of electric lights. To demonstrate the economy and efficiency of the Peirce Hammer Drill, a stone block weighing a half ton was provided, into which holes were drilled by the salesmen. It required not more than a minute to drill a hole and set the bolt. The company was represented by C. L. Peirce, Jr., A. L. Haase, A. J. Kusel, R. L. Crane and H. Ward. The Clay Product Company's vitrified Fire Clay Conduit was also exhibited, and attracted much favorable attention. This company was represented by H. H. Titsworth, H. M. Lignard, and Messrs. Kusel and Haase.

THE NATIONAL BATTERY CO., Buffalo, N. Y., showed a line of batteries and Unit Accumulators.

THE MCROY CLAY WORKS, of Brazil, Indiana, displayed its well-known clay conduits.

THE AMERICAN SEWER PIPE COMPANY was represented by W. R. Adams, sales manager, and W. H. Rook, master mechanic. The company showed a line of vitrified clay conduits of different sizes.

THE AMERICAN CLOCK COMPANY had an attractive exhibit in charge of the officers of the company, H. O. Jackson, president; Ed. Eves, general manager; G. F. Randall, secretary and treasurer; H. W. Pigeon, general superintendent, and E. E. Flors, mechanical engineer. The company showed for the first time its electric clocks synchronized over telephone wires, which have just been placed on the market. These clocks are automatically synchronized every 24 hours by an electric self-winding clock at the central telephone station. An electric time recording system was also shown.

MATTHIAS KLEIN & SONS, Chicago, Ill., had an exhibit of line-

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men's tools, and in the same booth The Bigley Telephone Company showed a line of reconstructed telephone equipment. John M. Klein and Alfred Onquest represented the respective companies.

THE HOLTZER-CABOT ELECTRIC COMPANY, Brookline, Mass., and the Oliver Manufacturing Company, of Philadelphia, occupied a space together. The latter showed the "Flexiphone," a new type holder and adjustable arm, and the former the Equipoise holder, a line of motors and generators, telephone supplies, etc., and the "Flexilight." E. R. Harding and W. B. Oliver were in charge.

THE GOULD STORAGE BATTERY COMPANY, New York and Chicago, showed a full line of batteries, lead-lined tanks and glass jars for telephone and telegraph central station purposes, also couple types for private branch exchange and central office uses. H. N. Powers, R. H. Watson, E. M. Hervey and John E. Eipper represented the company and reported that the Gould batteries are being used more than ever.

FRANK B. COOK, of Chicago, had an exhibit, at which Mr. Cook was present much of the time, assisted by F. W. Pardee, John F. Tompkins, F. R. Parker, R. C. Cook and the following road men: E. M. Snow, F. A. Rader, S. E. Harvey and J. M. Moore. A demonstration was given of Cook's self-welding wire joint. Among the specialties featured was the Type L distributing frame, combining distributing frame and protector, and Cook's new No. 10 resoldering coil, also a full line of pole terminals, twenty different sizes and varieties, and individual fuse mount protection.

THE STROMBERG-CARLSON exhibit was made especially attractive with an illuminated map, showing the location of some of the company's exchanges. The map was lighted electrically with larger opals to represent the central energy multiple exchanges. There was shown a section of a switchboard, which is to be a part of an exchange for the Twin City Telephone Company, of Minneapolis, having a capacity of 10,000 lines. The company was represented by J. P. Cracraft, sales manager, of Rochester, N. Y.; A. M. Haubrich, manager of the Chicago branch; William Bowen, of Iowa; Paul D. Myers, of Illinois; Sam W. Menefee, of Minnesota and Wisconsin; J. J. Nate, of Minneapolis, and E. P. Shafer, of Indiana.

THE ELECTRIC APPLIANCE COMPANY, of Chicago, was represented by P. R. Boole and F. J. Alderson. Its Packard lamps formed a very pretty display. Among the exhibits featured were Paranite rubber-covered wire, O. K. weather-proof wire and "Eaco" telephone specialties.

THE SWEDISH AMERICAN TELEPHONE COMPANY, of Chicago, was represented by M. S. Golladay, of Missouri. The company had a complete display of magneto exchange equipment. A special feature of the exhibit was a new removable drop coil, which can be taken out and put back without tools and without removing the drop.

THE VOTE-BERGER COMPANY, of LaCrosse, Wis., showed a common battery ballast switchboard without a relay, which does away with the risk of trouble from burning out; also, a 300-line magneto switchboard, magneto telephones, common battery telephones, D. and T. anchors, etc. The company was represented by W. A. Grimes, M. I. Berger, C. D. Enochs, P. W. Goodman and A. R. Callahan.

THE EUREKA ELECTRIC COMPANY, of Genoa, Ill., featured its central energy board, visual signal type, and a new magneto drop, which can be removed from the back of the board, all kinds of telephone equipment, etc. J. H. Bell, V. H. Messenger and G. H. Miller were in charge.

THE VULCAN ELECTRIC HEATING COMPANY, of Chicago, showed a fine line of soldering and branding tools, electrically heated. Among these was a long, slim, soldering iron for use in a multiple switchboard, very effective yet without enough heat radiation to damage the insulation of wires. Among the branding tools was one designed especially for putting the name of the contractor on the wooden handles of tools. The company was represented by F. J. Holmes, L. P. Brown, G. M. Cox, J. W. Fay and Herman Haines.

THE SANDWICH POLE CHANGER COMPANY had an exhibit in charge of G. H. Lenerett, E. C. Hennis and H. O. Rugh. They showed a line of pole changers adapted to straight ringing and selective ringing by alternating or pulsating current.

W. N. MATTHEWS & BROTHER, of St. Louis, had a most unique and effective display of the Sombaugh guy anchor. The display had all the effect of an actual out-door demonstration. One of the guy anchors had been bored into the soil five feet and then taken to Chicago, dirt and all. The anchor was shown embedded in the soil throughout its whole length. This anchor was of the 6-inch variety, which is guaranteed to hold 15,000 pounds. There was also an interesting display of the Hargis cable splicing joint, showing the different steps in making the joint; the Lima jack box for telephone service; the Callahan cable roller, which requires no wrenches; the Hold-Fast lamp guard for telephone exchanges, etc. The company was represented by W. N. Matthews, Claude Matthews, J. R. Kearney and V. T. Crawford.

THE NUNGESSER ELECTRIC BATTERY COMPANY, of Cleveland, showed a complete line of dry batteries.

THE HEPBURN TELEPHONE COMPANY, Chicago, showed an intercommunicating telephone, which was a decided departure from the ordinary arrangement. The 24-station switch is about the shape and size of the transmitter. It has a revolving dial, the numbers of which indicate the several stations of the system. By means of this device it is possible for all the pairs on the system to talk at the same time without interfering with one another. The company was represented by Walter L. Davis, its president; O. N. Davis, general salesman, and Wm. A. Rowley, electrician.

JOHN SHAFER, representing the Antiseptic Company, showed a line of the Red Cross antiseptic mouth-pieces for telephones. They are of aluminum and it is claimed that they kill all germs which may accumulate without injuring transmitting qualities.

The splendid exhibit of the DEAN ELECTRIC COMPANY, of Elyria, Ohio, attracted general interest. It is doubtful if a finer case of line and switchboard parts was ever shown than the one conspicuously placed in this exhibit. The company featured its Harmonic Ringing Machine, which will ring 300 bells at one time. The exhibit contained, among other equipment, a standard 3,000 to 8,000 ultimate, full common battery multiple board, as well as private branch exchange boards and a magneto switchboard arranged for harmonic party line service. Of course, a full line of telephones and parts was shown. The company was well represented by salesmen and officers. Those present were George A. Scoville, sales engineer; A. E. Barker, second vice-president; W. W. Dean, first vice-president and chief engineer; A. B. Smith, Michigan; L. M. Ford, Illinois; Fred Coulson, Nebraska; L. G. Bowman, western representative at Kansas City, and A. A. Hathaway, of the engineering department.

J. ALLEN HAINES, of Chicago, showed a large line of electrical supplies in charge of Mr. Haines himself, assisted by Dwight Welling, engineer.

THE WIRE AND TELEPHONE COMPANY OF AMERICA, Rome, N. Y., occupied the same space and made a great hit with its "Easophone." It also exhibited the well-known "Romeoid" wires, of which a full line was shown. The exhibit was in charge of H A. Hammond, sales manager, and F. M. Potter, vice-president.

THE CENTRAL ELECTRIC COMPANY, of Chicago, showed an interesting line of electrical supplies and novelties. The Reco sign flasher made the exhibit very conspicuous. Much attention was attracted by a very large "biscuit" of okonite rubber for insulating worth in the neighborhood of $240, and a section of submarine cable, badly tangled and twisted by a tug-boat in New York harbor. It put the boat out of business, but the cable was still doing duty when removed for repairs. The exhibit contained a line of Columbia telephone lamps, Okonite rubber insulated wire and cable, Edison LaLande primary batteries, D. and W. telephone protection sets, etc. The company was represented by F. R. Bryant, general sales manager; H. E. Erickson, advertising manager; R. L. Kimble and W. H. Pearl.

THE MONARCH ELECTRIC AND WIRE COMPANY, of Chicago, was represented by E. W. Kearns, A. D. Gillespie, H. E. Mason, E J.

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Cassem. Louis Schwab, president, and Henry Schwab, secretary, also spent a great deal of time at the exhibit. The company showed a line of the Nurnberg flaming arc lamps, Bryan-Marsh incandescent lamps, the Long Distance Telephone Manufacturing Company's telephone and equipment, Noark and Paiste material, and Marquette incandescent arc lamps.

THE AUTOMATIC ELECTRIC COMPANY showed the latest thing in automatic telephone systems, being two units of a 100,000 line installation, full central energy, 4-party selective. Two complete exchanges were shown in operation. Those in charge were Mr. H. H. Woodworth, advertising manager; J. S. Engh, J. A. Russell, J. E. Fisher, C. L. Fisher and P. J. Eubanks.

THE AMERICAN ELECTRICAL NOVELTY AND MANUFACTURING COMPANY made a feature of the Ever-Ready battery, a high voltage and ampereage cell combining long life with high efficiency. This battery has been before the telephone people about a year and a half and has been very successful. Sample lamps were also shown from the American Miniature and Decorative Lamp Company, Ever-Ready flashlight material and the Ever-Ready keyless clock, controlled by three batteries, which will run one year without winding. E. G. Weed was in charge, assisted by R. E. Bain and E. R. Behrend.

THE CENTRAL ELECTRIC MANUFACTURING COMPANY, of Rock Island, showed the Blackhawk batteries, the Frank W. Morse specialties, the E. W. Dolliver lamp coloring, and the Talmont Electrical Engineering Company's decorative lamps. All the goods in the exhibit were American made. The exhibit was in charge of H. J. Alvin, general manager; E. W. Dolliver and George W. Edge, of the Connecticut Electrical Manufacturing Company.

ROTH BROTHERS & COMPANY, of Chicago, represented by William Roth, showed a Twin Set Motor running a laundry machine, printing press, grinders, blowers, lamps, etc.

A very unique and interesting exhibit was that of the ARMOUR INSTITUTE OF TECHNOLOGY, of Chicago. This famous school showed a fine line of apparatus in use at the school, including a high tension voltmeter, which will measure up to 100,000 volts, and an oscillograph for indicating the wave forms of voice currents. There were also samples of mechanical drawings by the students and reports of laboratory experiments made by students. A rotating magnetic field, illustrating the principle in the induction type of alternating motor, attracted much attention. The school was represented by Ernest H. Freeman, D. A. Morton, C. D. Bowman, John E. Snow and F. H. Bernhard.

THE ELECTRIC STORAGE BATTERY COMPANY, of Philadelphia, showed a line of car lighting batteries and large cells, such as are used by the New York Central Railway and various telephone and telegraph companies. The company was represented by G. H. Atkin, J. M. S. Waring, H. S. Mushrall, W. F. Bauer, W. F. Rath and George Neth.

A wire wound column twenty feet high and surmounted by forked lightning in bronze marked the location of the exhibit of the AMERICAN STEEL AND WIRE COMPANY. Among the exhibits were a line of rail bonds, rail bonding tools and electrical wire and cables of all descriptions, fence rope wire and a full line of springs. The company was represented by C. R. Sturdevant, of the Worcester office, and B. B. Ayres, C. S. Knight and George Long, of Chicago.

PENDING LEGISLATION AFFECTING TELEPHONE COMPANIES.

(*Continued from page 52.*)

business hours. The enforcement of the act, should it become a law, is left in the hands of the State Railroad Commission.

NEBRASKA TO CONSIDER THE EXTENSION OF TELEPHONE FRANCHISE POWER.

CITIES of the second class, having less than 5,000 inhabitants, and villages, will be empowered to grant franchises for telephone systems for a period not to exceed twenty years, if Senate Bill No. 89 now pending in the Legislature of Nebraska should pass. The act provides that the Mayor and Council, or Board of Trustees, as the case may be, shall have power to grant franchises to any person, corporation or association, for the period mentioned, and shall have power to regulate the laying down of conduits and erection of poles, and also to regulate the sale and fix the price of telephone service.

MEASURE INTRODUCED IN ASSEMBLY OF THE STATE OF SOUTH DAKOTA PROVIDES FOR REDUCTION OF TELEPHONE RATES.

THIS drastic bill is intended to causes all such companies to reduce their rates for all business originating and terminating in the State of South Dakota twenty-five per cent. below rates in force on January 1, 1907.

A BILL TO COMPEL INTERCONNECTION OF EXCHANGES IN NEBRASKA.

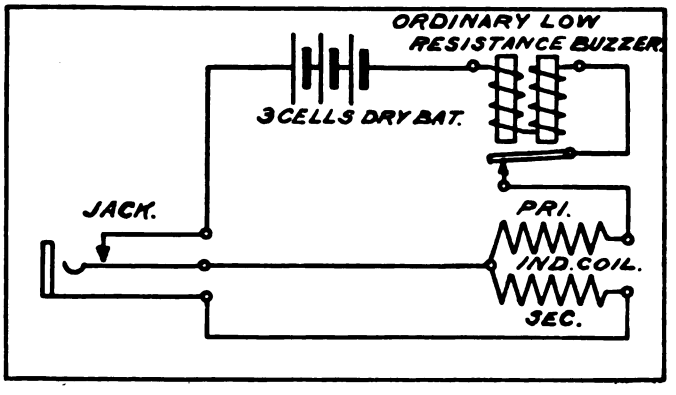
INTRODUCED by J. W. Whitham on January 8th, and returned to the Committee on Telegraph and Telephones of the House of Representatives of Nebraska, was a bill providing that it shall be the duty of any incorporated telephone company doing business in the State of Nebraska to connect its lines with the lines of any other incorporated telephone company doing business in the same city or village, where the first company has now or may establish a public telephone station. In this bill it is provided that this connection shall be made binding thirty days from notice.

PROHIBITION OF FRANKING OF TELEPHONE MESSAGES IN SOUTH DAKOTA.

UNDER Senate Bill No. 6 of the State of South Dakota, introduced by Mr. Byrne, telephone companies are included with railroad companies in a clause of the bill which prohibits the giving of a free ticket or frank to enable a person to transmit messages without offering remuneration in the regular form.

ANOTHER HOWLER CIRCUIT.

NOTING our recently published description of a Howler Circuit, Mr. B. D. Hursh, manager of the Stroudsburg & Bushkill Telephone Company, Stroudsburg, Pa., has sent us in the diagram which appears in the accompanying illustration. While this employs practically the same arrangement of battery, buzzer and induction coil which was described in a previous issue, its novelty consists in a very simple plan for applying a howler to a line on which a telephone has been left off the hook.



Simple Howler circuit for use with regular cords in a magneto exchange.

The idea is simply to connect the circuit to a jack which is adapted to close the battery circuit when a plug is inserted, in a manner which will be plainly evident from an examination of the diagram. The operator inserts one plug in the line to which the howler is to be connected, and inserts the mate in the howler jack cutting out her listening set, so that she may not get the howler noises in her ear. An especially convenient arrangement for mounting is said to consist of a jack arranged similar to an ordinary operator's receiver jack, but adapted to fit a regular switchboard plug. In the exchange where this plan is now in operation there is an exceptionally well equipped shop, and a special jack was made for this purpose.

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IN THE OPERATING FIELD

INDEPENDENT TELEPHONE DEVELOPMENT IN THE SOUTHWEST.

By Chas. F. Speed.

THOSE who have read in the papers that there are counties in Texas which are owned by one man may wonder where there is any chance for the telephone man to find subscribers. This may be quickly off-set by the statement that nearly every exchange has a large waiting list. In the writer's home town of Texarkana the Independent company has a subscription list which outnumbers that of the Bell company two to one, and has had for the past two years a very large waiting list all the time, although it has kept a construction force at work. Other cities are behind their orders in the same manner.

The reason for this is due largely to the rapid growth of the country, caused by the immense ranches being cut into farms. The Southwest has been continually calling for settlers, who have responded in great crowds; thus they are slowly filling up the vast country, building new towns, and increasing the population of the older ones, and putting on the telephone man a demand for service, which he has been unable to meet. There is no question but what this is a healthy condition, however, for it results in the exchange manager being able to select his subscribers according to their financial standing.

The first Independent telephone exchange in the Southwest was operated by the Pan Telephone Company, of Fort Smith, Ark., which began operation in the earliest days after the expiration of the Bell patents, and is still operating and holding its own very well. Little Rock, Ark., started about the same time, and for years applied earnings to the building up of the system. The stockholders, however, wanted dividends, so that development could not continue on this plan.

Although there are believed to be between thirty-five and forty thousand Independent telephones in Arkansas; there are only about forty miles of Independent long distance lines in the State. This defect is likely to be met this year by the Telegraphone Company, which is now at work building lines out of Little Rock, and expects to connect Little Rock with Pine Bluff, Memphis, Texarkana, Fort Smith and St. Louis.

In Louisiant the early Independent movement took a strong hold, and nearly all the towns and cities were built Of these plants the Cumberland Telephone and Telegraph Company bought up all but a few, the principal ones left being Shreveport, with 1,400 subscribers, and Monroe, with 500. Genuine Independent development of this State, however, is to be undertaken, and the end of this year will see the situation somewhat changed.

Texas, in the early days, proved an inviting field for the promoter, because with the high rates for service, he could show an excellent prospectus, even though he had excessive bond and stock issues. It is enough to say that the promoter withdrew from Texas some three or four years ago, when he found the Texas people would not buy five and six per cent bonds. Why should they when money brings eight per cent on the best of security, and not infrequently very much higher rates? The telephone man who comes to the Southwest with the intention of remaining, and becoming one of the people, can find many excellent opportunities for investment, and can secure local capital to assist in the work, but he will be expected to show his faith in his work by holding the greater part of the stock, and remaining as a citizen.

Towns having less than 300 subscribers pay rates of $1.50 per month for residence telephones and $2.50 for business telephones, the larger exchanges getting $2.00 for residence telephones and $3.00 for business telephones. The toll line business in the Southwest is more profitable than in any other section of the country, because of the cotton business. Rates for service, except the minimum, which is higher, are about the same as in other parts of the country, but the volume of business is greater. All well-built toll lines are doing double duty, being used by cotton brokers for telegraph purposes and by the exchanges for toll service. It is not at all unusual for a cotton broker's monthly bill during the cotton season to run from three to six hundred dollars. In the Southwest exchanges provided with good toll line connections frequently do an average from six to eight dollars' worth of toll business per subscriber per month.

WHAT DO YOU WANT TO KNOW?

THE Editor of The American Telephone Journal *frequently receives letters from subscribers asking where printed information about one class of telephone work or another can be found. Frequently he has to refer the inquirer to something that does not exactly fit his needs, because the needs are not clearly stated or because there is nothing published which covers the case.*

The Query Department *is maintained especially for the benefit of practical telephone men, who wish to have reliable answers to practical questions. Whoever sends in a query, no matter on what subject, may be sure of receiving the opinion of an expert.*

The Editor wishes to have each subscriber realize that an answer to any question relating to telephone work will be furnished to him promptly, and without cost. All that is necessary is that he shall, in addition to asking his questions, state clearly all facts necessary to give a complete understanding of his local conditions, in order that the answer may be made reliable.

Address all queries to The Editor, American Telephone Journal, 100 *William Street, New York City.*

NEW MEANS OF APPROACH TO ORIENTAL ROYALTY.

IN the public square of Teheran, the capital of Persia, according to a London newspaper, there has been set up a telephone booth, from which the people may converse directly with the Shah. This is said to have been set up in order that those with grievances might have an opportunity of communicating their complaints to him. This privilege has hitherto been denied them, even the near approach to his person being prevented by the vigilance of his guards.

Newspaper men, even in London, are beginning to realize that the telephone can be made the basis of some very interesting stories.

ARKANSAS INDEPENDENT TELEPHONE MEN WILL MEET AT LITTLE ROCK.

THE annual meeting of the Arkansas Independent Telephone Association has been called for February 18 and 19, at the new Hotel Marion, in Little Rock. This is the second meeting of the association, and it is expected that nearly every prominent Independent telephone man in the State will be present. The question of further developments in the general interest of the Independent movement, and greater efforts in toll line construction will be the main subjects for discussion. The International Association has agreed to send a delegate to the convention to represent that body.

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IN THE OPERATING FIELD

CONSOLIDATED COMPANIES OF PENNSYLVANIA HOLD WELL ATTENDED MEETING.

At the annual meeting of the Consolidated Telephone Companies of Pennsylvania, held last week, it is said that stockholders representing more than three million dollars worth of holdings were represented. This company is now operating thirty-eight exchanges, with a total of 16,944 telephones, as indicated by the annual report of Superintendent Charles West. The increase in the number of subscribers has been very satisfactory, a gain of 2.6 per cent during the past year being recorded. General Superintendent West referred to the policy of extensions, which, since its original introduction by him, has led to extensive development in the coal, slate, cement and silk regions, and this will be continued, with the additional development of long distance lines as rapidly as possible during the coming year.

A board of directors for the coming year was elected as follows: George O. Albright, R. E. Wright, Allentown; A. J. Brumbach, Reading; Thomas Daugherty, Allentown; Frank M. Green, Washington, D. C.; Wilson J. Hartzell, Allentown; J. P. Helfenstein, Shamokin; A. P. Trautwein, Carbondale; George N. Reichard, Wilkes-Barre; John R. Hendel, Reading; George R. Bedford, Wilkes-Barre; W. A. Lathrop, Philadelphia; C. D. Simpson, Scranton; I. A. Stearns, Wilkes-Barre; C. W. Kline, Hazleton.

The board organized by electing these officers: President, Robert E Wright; vice-president C. W. Kline; secretary and treasurer, C. M. W. Keck, Allentown; general superintendent and assistant secretary, Charles West, Allentown.

SLEET AND SNOW

Give You a Chance to Win That

$20 Prize

For the best illustrated article on losses due to an accident from sleet, and how to build to prevent such damage.

Have you had a chance to take your photographs yet? They are essential. If they are ready, hurry up and get all the facts required, make your article complete and thorough and send it in as soon as possible.

If no severe weather has come yet, get ready for it. Be prepared to do some quick work when the storm strikes.

CUMBERLAND COMPANY HAS MANY TROUBLES BEFORE THE MISSISSIPPI RAILROAD COMMISSION.

Complaints against the Cumberland Telephone and Telegraph Company (Bell) from a number of towns in Mississippi are being taken up by the Railroad Commission, which is now in session at Jackson. The principal difficulties are in the matter of rates, as the company is alleged to have violated the provision of the statute in regard to inter-county messages. Complaints to the commission have been received from Hattiesburg and Meridian, where boycotts have been declared against the company. In Vicksburg the opposition to the company while less formal, is none the less emphatic. Citizens are vigorously going to work to organize an Independent company to give the service which they cannot obtain from the concern now operating. Biloxi has a complaint pending, alleging that the service furnished is inadequate and generally unsatisfactory. These movements from different places in Mississippi are the result of a dissatisfaction which seems to exist throughout the territory.

Complaints from many other places, alleging that the Cumberland Company has not complied with the order relative to inter-county service, have been received, and they are being vigorously pushed. It is believed by those who are familiar with the situation, and the previous acts of the company, that at the last moment it will seek to come to some sort of a settlement which will avoid the possibility of its being subjected to a stringent order, and subsequent close supervision by the commission.

NORTHWESTERN TELEPHONE EXCHANGE COMPANY ATTEMPTS TO HOLD FRANCHISE BY BUILDING.

Soon after the expiration of the franchise of the Northwestern Telephone Exchange Company (Bell), at Yankton, S. D., the company announced that it was about to undertake the rebuilding of its system. The city council was unwilling that the company should operate without a franchise, and, as it assumed that the organization was absolutely without legal rights in the city, it ordered the marshal to instruct the local management of the company that no work upon improvements should be undertaken. This formal order was issued by the council in the belief that refraining from interfering at this time would be tantamount to extending the charter of the company. The proceedings are of great interest to the Independent company at Yankton, and its associates in other Dakota towns, who are carefully watching developments in this interesting situation.

GERMANS SAID TO HAVE TAKEN UP FERRET IDEA FOR RUNNING CABLES.

A construction superintendent in Indiana, to whom the newspapers attribute the recent revival of the plan of using ferrets in the operations preliminary to the drawing in of telephone cables, may be responsible for the waking up of German telephone men to the advantages of an animated substitute for the duct rod. A German newspaper is authority for the statement that in Munich the scheme has recently been put in operation.

In Munich it is understood that rats, liberated ahead of the ferrets, supply the incentive to effort, while the reports issued in this country say that a piece of meat at the distant end of the duct is sufficient attraction. If the Americans have not by chance found a livelier breed of ferret, the Germans must have made a step in advance, possibly owing to improved methods of catching bait.

BOSTON TELEPHONE SUBSCRIBERS INQUIRING INTO BELL RATES.

Precipitated by the publicity given to telephone affairs at the time of giving a franchise to an Independent company, an inquiry into the rates of the Bell company is being pushed before the Massachusetts legislature. Its object is said to be particularly to secure reductions and greater uniformity in rates between Boston and various suburban points, with which telephone users are reported to be at present very far from satisfied.

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QUERIES

KICK COIL TELEPHONES.—(817.)

The following abstract from a letter recently received from the manager of an Indiana company seems to be an interesting contribution to the discussion of "kick coil" telephones which was recently precipitated by the inquiry of a subscriber.

"The arguments put up by the engineer who wrote the material published in your issue of Dec. 29th are good, but they do not entirely agree with our experience.. Although the writer has had no experience in an exchange equipped wholly with kick coil telephones, he has worked on two instruments of this kind which were taken from a salesman for a trial. They seemed to give good results, but perhaps this was because they were favorably located, as one was in the home of a director and the other used by the construction foreman.

"One was in service about six months and the other over one year without trouble or a change of batteries. We have in our office a Stromberg-Carlson 1,200-line multiple visual board.

"Our visual signals are not rung up by the generator. A pulsation from any source simply closes a very close contact, which cuts in the storage battery through an electro-magnet coil, whose action pulls the visual up and holds it until a plug is inserted, which opens the battery, allowing the visual signal to return to the inactive position.

"Clearing out signals are wound to 500 ohms. Not only is this visual line signal very sensitive, but clear outs are so as well, and positive.

"The line at the home of the foreman was common return and heavily loaded, the return being light. His instrument always worked well. To experiment, we cut another series instrument in series with his telephone, the second instrument being between the kick-coil and office. The coil would kick the target every time and also would clear out, lighting the pilot lamp. These telephones were connected on two jacks. The writer placed 6,000 ohms of No. 36 German silver wire in one line and was able to kick a signal and when the two were connected together was able to clear out from either. This was a shop test.

"In practice the foreman found that if he removed his receiver very quickly he would not signal the board. This might be explained by assuming that if the hook snapped up suddenly, allowing the contact to pass very rapidly, it might not give the coil sufficient time to saturate before it discharged to do its work. This could probably have been remedied by a little change in the coil contacts by the manufacturer. If this trouble existed in all of them the public would need a little educating. Such a remedy as is suggested, however, might bring in constantly the trouble from throwing the clearing out signal when the called subscriber came in on the line, as mentioned by your other correspondent. It appears that our telephones did not always throw the clearing out drop when a call was answered, and this may, possibly, be attributed to the fact that a person as a rule takes his receiver off the hook much more quickly when answering a call than when calling for a connection. This explanation is in line with that given for the occasional failure to throw the line signal.

"The engineer's statement as to the battery going to pieces very quickly on account of a short circuit through the kick does not correspond with our experience. The make and break contact to operate the kick is so rapid that the current consumption does not amount to anything. With a five-minute conversation and its requirements there would be hardly any comparison. These telephones talked up well and were good over bad lines, connection having to be made through several switchboards, after the battery had been used one year to operate the kick coil and transmitter also.

"There is one thing which is sure, and that is, just as stated by the engineer who wrote for your issue of Dec. 29th, that if you got in the circuit and removed the receiver, you were not certain whether the coil kicked you or something else."

W. C. S., Ind.

The trouble due to the action of the contacts in this type of instrument seems to be generally experienced. This is confirmed by another telephone manager, who writes as follows:

"With reference to kick coil telephones, we have not found them satisfactory, especially as we have a plunger type of drop that is not sensitive though positive. A common trouble is that, with only two cells of battery, the passing contact of the hook is too short to secure the maximum effect of the coil at either make or break, especially when, as frequently happens, the receiver is slipped off the end of the hook, allowing it to fly up suddenly instead of the way intended. While I greatly admire, enjoy and agree with the writer in the issue of Dec. 29, I might suggest that transmission does not suffer so seriously, because the batteries are O K for the transmitter long after they have passed the pink of condition required for kick coil, but this is not economy."

B. D. H., Pennsylvania.

A SUPERVISING CIRCUIT FOR A MAGNETO SWITCHBOARD.—(818.)

In THE AMERICAN TELEPHONE JOURNAL issue of January 5, 1907,an inquirer asks for information about a quiet supervising circuit. We have found the following to meet all requirements: A third winding of wire of the same size, and having the same resistance as the secondary coil, is wound on the outside of the induction coil of the operator's set. The terminals

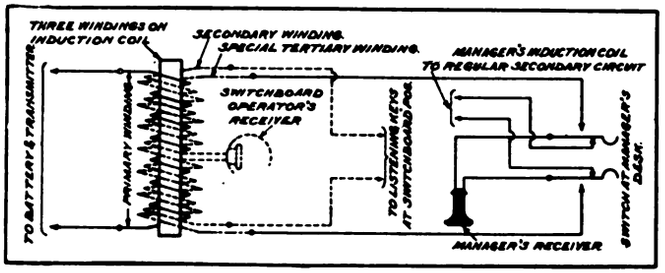

Fig. 818.

of this third winding are led directly to a receiver placed within easy reach of the manager.

We use a modification of the ordinary hook switch to break the circuit when the receiver is not in use, but a switch might be provided so that the regular telephone receiver could be used instead of the extra one. No sound is produced in the operator's receiver when the manager listens in to supervise a connection. We have used it for three years and the operators do not even dream of its existence.

G. J. S., Ia.

SWITCHBOARD CABLE IN IRON PIPE.—(819.)

We have to carry a number of wires across a basement, and the most convenient method is to use a switchboard cable in an iron pipe. Would the insulation stand up under these conditions? C. R. F.

Under the conditions you mention the insulation would soon be so much damaged by moisture that you would have bad cross talk. It is impossible to avoid "sweating" in a buried iron pipe subject to changes in temperature. The effects of this might not make themselves evident for a few weeks, but are bound to come eventually. So much moisture would accumulate that it would probably be undesirable to even use a cable made up of rubber insulated wires. We would suggest the use of a lead covered cable with cotton insulation. The ends should be boiled out in wax.

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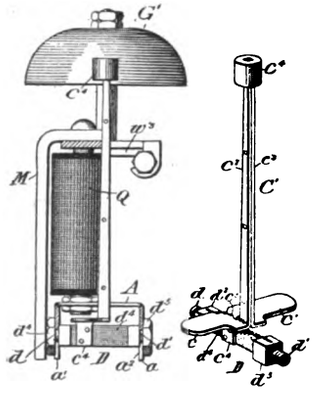
TELEPHONE PATENTS

POLYSTATION SIGNALING.

William W. Dean, Elyria, Ohio, patents (No. 840,995; dated, Jan. 8, 1907; filed May 19, 1905; serial No. 261,132) and assigns to the Dean Electric Co., Elyria, O., a method of polystation signaling.

The patent covers a method of selective harmonic signaling which comprises the following steps: Communicating to a stiff tuned reed successive small increments of periodic energy of a proper frequency, and thereby raising the reed from an inactive condition to one of active vibration. Energy is stored up in the reed, causing it to vibrate with gradually increasing amplitude, until at the point of maximum amplification the interposition of a positive stop prevents further advance of a part of the vibrating structure so that the entire cumulative energy will be imparted to the remainder of the structure to produce a stroke at such accelerated velocity as not to alter the normal periodic vibration of the structure as a whole.

In the embodiment of the invention described, armature stud D carries studs d d^1 held in slotted extensions a a^1 in armature yoke A. These studs are formed upon terminal blocks d^2 d^3 con-



nected by a stiff spring d^4, the ends of which are riveted in slots in the blocks. The armature C is formed integral with clapper rod C^1.

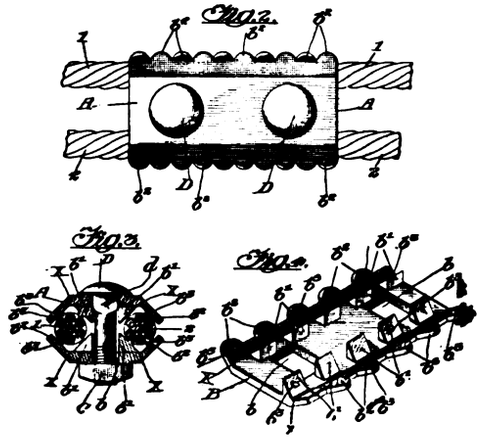
A selective reed is thus formed of parts D and C^1, and its period of vibration is determined by the position of clapper C^4 upon the rod. In operation when a current of proper frequency is thrown upon the line the reed will commence to buzz, armature wings c c^1 approach to and recede from pole pieces q q^1 with successively increasing amplitude of vibration and a corresponding increase of the force of attraction. The cumulative force soon causes one armature end to forcibly strike its pole piece, whereby the armature is stopped. Clapper c^4 will continue to travel. Owing to the resiliency of rod C^1, the clapper strikes the gong and instantly recoils, the action occurring without its natural period being substantially effected.

CABLE CLAMP.

Frank B. Cook, Chicago, Ill., patents (No. 839,919; dated, Jan. 1, 1907; filed Oct. 10, 1903; serial No. 176,457), a cable-clamp.

This clamp comprises a pair of jaws A and B, adapted to be drawn together by nuts C on bolts D. Jaw B has square openings b, to receive the square portions d of the bolt, in a manner which prevents the bolts from turning. This jaw is provided with inner rows of teeth b^1 and outer rows of teeth b^2. Teeth b^1 at one side of the center line alternate relatively to teeth b^2 at the other side and teeth b^2 have a staggered arrangement relatively to the adjacent teeth b^1. Certain teeth are provided with small projections b^3 on their inner surfaces.

The other jaw A can be a duplicate of the jaw B. When



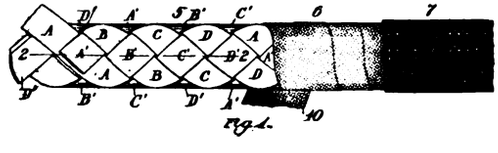
turned face to face the teeth of one jaw alternate with similar teeth of the other jaw. The effect of the staggered arrangement of the teeth is to provide V-shaped clamping grooves, which permit of considerable variation in the size of cable to be held.

CONDUIT.

Louis A. Jones, Cambridge, Mass., patents (No. 840,066; dated Jan. 1, 1907; filed Oct. 17, 1904; serial No. 228,675) and assigns to the American Circular Loom Co., Chelsea, Mass., a flexible conduit.

This conduit is built up of a tube 5, a protective wrapping 6, and an outer tube 7. The inner tube is formed of flat strips of resilient insulating material, A, B, C and D, each wound in the form of a right hand helix. Interlaced with these strips are similar strips A', B', C', D', wound to form left-hand helices. These strips are preferably made of such a width and wound at such a pitch that they cross each other at right angles, as in this way it is easier to form a short bend at the points of intersection and also makes it impossible to greatly elongate the tube by a pull.

Protective wrapping 6 consists of a flat strip of adhesive ma-



terial 10, wound in helical form, and intended to afford a means for protecting the tube 5 so that the waterproofing composition and mica, subsequently applied to the conduit, may not penetrate to its interior. The outer tube 7 is preferably a tubular layer of woven fabric, which serves to protect the inner layer and render the conduit as a whole non-extensible. After this has been applied the conduit is submitted to a process by means of which it is covered with a waterproof and insulating composition, and is then run through powdered mica to give it a sparkling appearance of a distinctive character.

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THE DEADLY PARALLEL

ATUOMATICS VS. LEVERS

With GRAY PAY STATIONS you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

THE GRAY TELEPHONE PAY STATION CO.

HARTFORD, CONN.

OUR '07 CATALOGUE SENT ON REQUEST

FOR SALE

For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

FOR SALE—1,000 Kellogg magneto telephones; Viaduct Mfg. Co. ringers; Wabash Cabinet Company's back boards and battery boxes. Good condition, almost new. Will sell singly or in lots. For particulars, write Kinloch Telephone Company, C. W. Shands, Purchasing Agent, St. Louis, Missouri. 755

FOR SALE—At half price, one hundred forty American Electric four-party, selective, ringing telephones. First class condition—most of them as good as new. Address Zenith Telephone Co., Duluth, Minn. 762

FOR SALE—Fisher Cable Testing Set, high sensibility galvanometer, 100000 ohm coil, Ayston shunt, ½ mf. sub-divided condenser, Wheatstone bridge. Original cost $485.00. Will sell at a bargain. J. W. Wright, 1304 Arch street, Philadelphia. 766

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

POSITION WANTED—Practical telephone man with five years experience wants position as manager of good Independent concern. 27 years old; married; best of references. Willing to invest money with good Independent company. Will handle any system up to 800 subscribers. Address Box 757, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 757

WANTED---Continued

WANTED by Bell Telephone Company, operating 100,000 stations, competent District Managers and experienced maintenance men. Unusual prospects for new men owing to changes in organization. Address Box 758, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 758

WANTED—At once three honest, sober, industrious young men who have some knowledge of magneto switchboards, as well as line work, to take charge of small exchange. State experience and salary expected. No drinker need apply. Address Box 759, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. Southern, Box 166, Leesville, La. 759

CABLE SPLICERS—Wanted, cable splicers to work on paper telephone cables. Highest wages paid to first class men capable of doing all kinds of cable work. For particulars, address Box 761, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 761

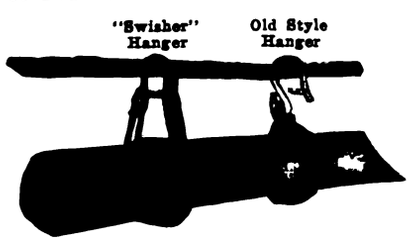
WANTED—Responsible position by man with 20 years' experience in telephone business. Thoroughly acquainted with every branch, technical and administrative. Address Box 763, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 763

WANTED—A position in the West or Middle West with an Independent telephone company. Have had 20 years' experience. Best of references. Address Box 764, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 764

WANTED—Position as Manager. At liberty after April 1st. Experience in both magneto and central energy plants. At present manager of a plant of 2,500 subscribers. Best of references. Address Box 765, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 765

SWISHER CABLE HANGER

The Swisher Hanger is a Combination of the Best Ideas of Practical Linemen who have tried to overcome the weaknesses and imperfections of the old style hanger. It saves time and trouble, men and money. Write for circular and price list.



THE W. G. NAGEL ELECTRIC CO.
TOLEDO, OHIO

SUBSCRIBER'S LEASE AND TOLL LEDGERS

Write To-Day For Samples and Prices. Toll Bills. Rental Bills

Form G-90.	For Small or Branch Exchange use; carries account for 2 years.
Form G-90-A.	For Large and Medium City Exchanges and Systems of Exchanges; the most complete form made.
Form G-90-B.	For City Exchanges having many Rural Lines.
Form G-90-C.	For City Exchanges, Rentals and Toll Charges separated.
Form G-90-E.	For Small Exchanges, Rentals only.
Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
Form G-90-H.	One subscriber to a sheet; carries account 12 years.
Form G-90-I.	For Small Exchanges; Bound Books; carry 12 subscribers on a page for 1 year.

THE Edwards-Hine Co.

TELEPHONE SYSTEMATIZING DEPT.
5 and 7 PEARL STREET (EAST), GRAND RAPIDS, MICH., U. S. A.

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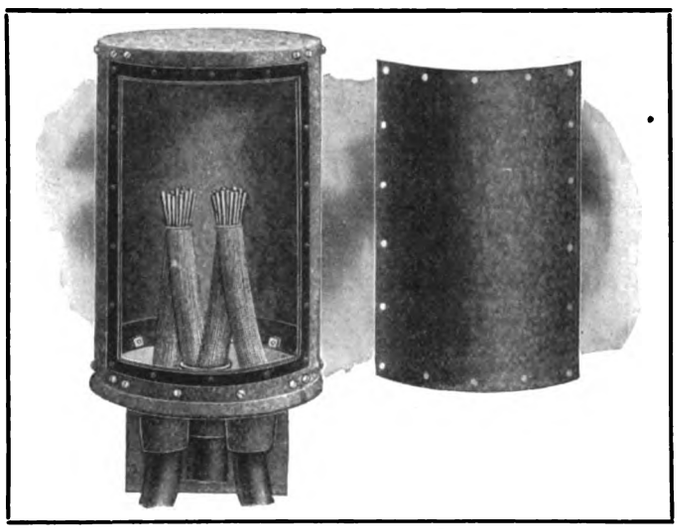
IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

A NEW JUNCTION BOX.

FRANK B. COOK, 238 West Lake street, Chicago, Ill., is putting out a new junction box. The method of manufacture, in which lies the novelty, has made this new box better in many ways than earlier types. In the first place, the new box is made of sheet steel, heavily galvanized, this construction making it very much lighter than the old painted cast-iron boxes. The difference in weight is so great that it will effect a material saving in freight, and also makes it much easier to handle a box on a pole.

This junction box is designed to furnish an economical and simple means for installing and splicing main leads of cable and extending branches of smaller cable to other distributing points. It renders sleeve splicing or wiped joints unnecessary. It makes cable testing a very simple matter, as the box can be opened more easily than can a cable joint. It is claimed to be moisture-proof, and has a sliding galvanized sheet-metal cover which furnishes added protection. The junction box is equipped with self-soldering nozzles. The sheet steel of which the box is made is galvanized after being formed up, so that the galvanizing will fill all the joints and make the box airtight, a rubber gasket rendering the joint between the cover and the box moisture-proof. In order to make sure that the joint actually is moisture-proof, the junction box is subjected to an air pressure test before leaving the factory.



The New Cook Junction Box.

The bottom of the box is about 2 inches deep so that paraffine or a compound may be poured in to that depth, after the cable has been brought in and spliced. This is an additional protection to the cable against moisture.

This new Cook junction box can be furnished separate, or combined with a terminal if desired. One new and original feature of this box is that it may be installed alone originally, and the terminal can then be added at any future time.

All Cook junction boxes are equipped with self-soldering nozzles. Self-soldering nozzles are a great convenience and are really very economical as they save the services of an expert cable splicer or of a plumber to make wiped joints. All that is necessary is to scrape the lead cable sheath bright and clean before inserting it in the nozzle. To solder the cable to the terminal, a blow torch is applied to the outside of the nozzle, first wrapping tape or paper around the bottom of the nozzle to prevent the solder from running out. The necessary amount of solder and flux for finishing the joint is inside of each self-soldering nozzle.

THE PIERSON & DEAN CO., 144 Orange street, New Haven, Conn., manufacturers of the P. D. battery connector described in AMERICAN TELEPHONE JOURNAL, issue of January 12th, is prepared to send out a sample of the connector to managers of telephone exchanges who wish to see the merits of the device at first hand.

Where so much trouble with contacts is experienced as comes up in connection with the use of wire for jumpers between cells of dry batteries, it would seem that a device which may be economically placed and at the same time secure a permanently reliable connection should have a large field of usefulness.

The company firmly believes that this device has these qualities and will be glad to have an opportunity to demonstrate them to every telephone manager who requests information.

THE SWEDISH-AMERICAN TELEPHONE COMPANY, Chicago, Ill., has just opened a new branch office at Sioux Falls, S. D. The building is situated in the central business district of Sioux Falls. Nos. 300, 302, 304 North Phillips avenue being the street address. The company will carry in stock at Sioux Falls a complete line of telephones and telephone line material, packed ready for shipment, and states that orders will go forward the same day they are received.

Sioux Falls is an exceptionally favorable point for Northwestern and Western distribution, the following railroads entering that city: Chicago & Northwestern Railway, Illinois Central Railway, Rock Island Railway, Chicago, Burlington & Quincy Railway, the Chicago & Great Western Railway, and also the Wisconsin Central Railway.

A switch track has been placed for use of the building the Swedish-American Company will occupy so that no delay for hauling material will be experienced by purchasers.

The establishment of this new branch, together with the branch already established at Kansas City, Mo., places the Swedish-American Company in a position to fill and deliver orders very promptly.

The office maintained at Fargo, N. Dak., will be discontinued after February 1, and Mr. C. L. Ward, who has been in charge at that point, will take charge of the branch at Sioux Falls.

FREDERICK PEARCE CO., 18 and 20 Rose street, New York City, has just announced the completion of extensive preparations which it has been making for supplying electrical engineers and laboratory workers with electrical and scientific measuring instruments of superior quality.

About a year ago this company purchased the business formerly carried on by the Willyoung & Gibson Co., New York City, and since that time the requisite facilities in the way of space and equipment have been provided for a thoroughly progressive development of the business. The company has carried its work in this line so far that it now states that it is ready to turn out from its own establishment a full line of electrical and scientific instruments of excellent design and first class construction.

The company is not only able to supply standard equipment, but to develop apparatus from special designs, having an experienced and competent corps of designers and mechanics in addition to the necessary tools and equipment.

It will be pleased to hear from all persons interested in its apparatus, not only for present use, but from those who desire to have their names placed upon the company's mailing list for catalogues and other information which will be issued from time to time.

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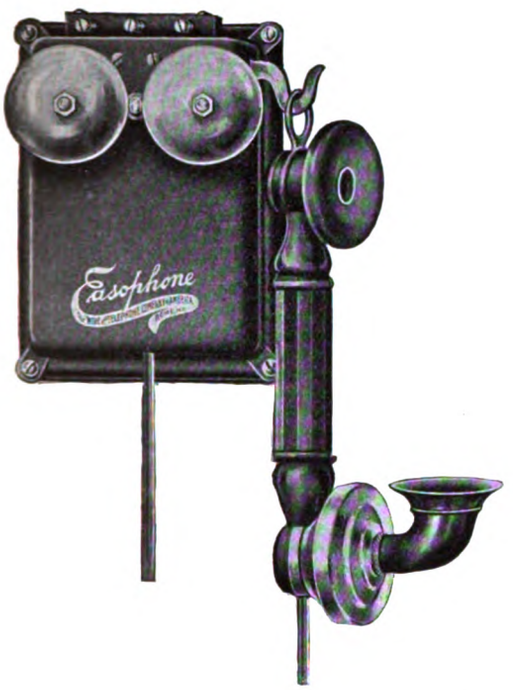


Easophones
The WIRE and TELEPHONE COMPANY of AMERICA
ROME, N.Y.

Long Distance Hand Telephone
Long Horseshoe Magnet Receiver

SOLID BACK TRANSMITTER
NO EXPOSED CONNECTIONS
SINGLE COIL RINGER
REVERSIBLE HOOK

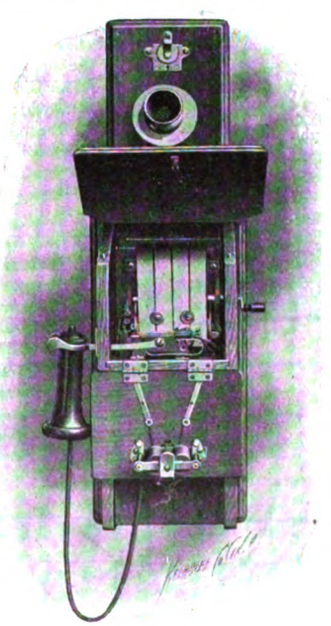
WRITE FOR BULLETIN No. 101

THE WIRE & TELEPHONE COMPANY OF AMERICA
ROME, N. Y.

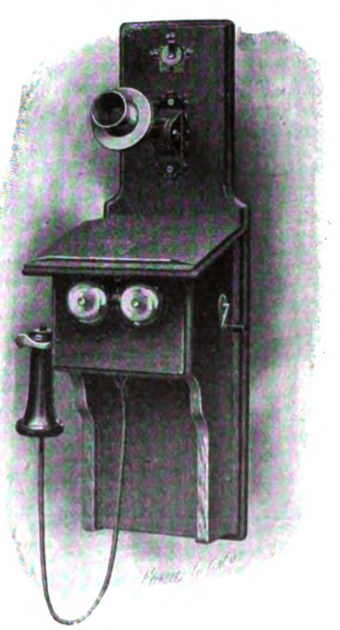
COMMON BATTERY TYPE CABINET MAGNETO PHONES

Sumter Standard Parts—with a few useful features the other fellow hasn't got yet

GET BULLETIN 41



WRITE TODAY



1907 MODEL

THE SUMTER TELEPHONE MFG. CO. ... SUMTER, S. C.

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THE WEEK'S MESSAGES

NEW COMPANIES.

ROGERS, ARK.—A Farmers' Rural Telephone Company is being organized at Rogers to build lines in Rogers, Bentonville, Pea Ridge, Avoca, Brightwater and Garfield.

VAN BUREN, ARK.—The Farmers' Union of Crawford County is preparing to form an Independent telephone company for the purpose of establishing a system of rural telephones. The new company is to have a capital stock of $20,000, and A. L. Keith is one of the principal organizers.

INDUSTRY, ILL.—The Industry Mutual Telephone Company has been organized, and will shortly file articles of incorporation.

TAYLORVILLE, ILL.—A reorganization of the Christian County Telephone Company has been effected by the transfer of the controlling interest from Messrs. Jones and Winters, of Chicago, Ill., to residents of Christian County. The company now has exchanges in Taylorville, Morrisonville, Stonington, Owaneco, Tower Hill and Pana. It is its intention to increase the capital stock from $165,000 to $200,000, the increase in stock to be used to further extend its system.

FRANKFORT, IND.—Articles of incorporation have been filed by the Jefferson Telephone Company, Jefferson, Ind. (P. O. address Frankfort, Ind.) The company has an authorized capital stock of $900 and the incorporators are William H. Engle, Joseph D. Sheirer, J. W. Stafford, Philip Heinbach, W. T. Gillallan, D. F. Young, B. M. Knapp, D. B. Horlacher and Robert Braden.

GARDEN CITY, KAS.—The Garden City Telephone, Light and Manufacturing Company has been incorporated with a capital stock of $150,000. It is the intention to furnish telephones and lights for Garden City. The following directors have been elected: E. L. Wirt, E. E. Wade, Garden City; F. R. Marsh, C. V. Turner, C. W. Kurie and W. H. Spurgeon, of Colorado Springs, Col.

SAUK CENTER, MINN.—The farmers in Birch, Dale, Kandota and Southern Little Sauk have formed a rural telephone company known as the Sauk Valley Telephone Association. Among those largely interested in the company are A. H. Hendrickson and Mr. Trones.

RICH HILL, MO.—A Farmers' Telephone Company has been organized by the farmers south of Rich Hill, whose intention it is to construct a line from Rich Hill to Metz.

VICTOR, MONT.—A Rural Telephone Company is being organized at Victor by A. P. Williamson and T. E. Combs. It is the new company's intention to construct lines between Victor and Stevensville, at both of which places exchanges will be established.

CLIFTON SPRINGS, N. Y.—Articles of incorporation have been filed by the Rural Telephone Company, of Clifton Springs. The capital stock is placed at $4,000, and the incorporators are L. P. Conley, W. H. Vanderhoof and J. J. Johnson, of Clifton Springs.

OKLAHOMA CITY, OKLA.—The New Era Telephone Company, of Oklahoma City, has been incorporated with a capital stock of $20,000. Among those interested in the new enterprise are J. W. Wilson, W. E. Larsh and others.

DUBLIN, TEXAS.—The Dublin Farmers' Rural Telephone Company, of Dublin, has filed articles of incorporation. It is its intention to construct and operate telephone lines in Erath, Hamilton, Comache and Bosque counties. The incorporators are J. G. O'Brien, R. L. O'Brien, M. D. Gallagher, J. W. Higginbotham, Q. H. Humble and J. H. Tull, and the capital stock is given as $20,000.

OTTAWA, ONT., CAN.—Application is to be made to Parliament at the present session for an act incorporating the Bonaventure and Gaspe Telephone Company, Limited, with power to construct, maintain, acquire and operate telephone and telegraph lines in the provinces of Quebec and New Brunswick.

FRANCHISES.

EMERYVILLE, CAL.—Application for a franchise to operate a telephone system at Emeryville has been filed by the Home Telephone Company of Oakland.

PACIFIC GROVE, CAL.—A fifty year franchise has been granted to the Monterey, Fresno and Eastern Railroad to construct telephone lines over certain streets in Pacific Grove.

DE LAND, FLA.—Application for permission to construct telephone lines from De Land through Orange City, Enterprise and Osteen has been granted to S. V. Hough.

BUSHNELL, ILL.—The Farmers' Telephone Association has requested permission of the city council to construct lines in Bushnell.

SENECA, ILL.—The franchise of the Newark Farmers' & Merchants' Telephone Company has been passed at Seneca.

PALMYRA, MO.—The Miller Township Company, assisted by local capital, expects to ask for a franchise to erect telephone lines in Palmyra.

PENASCO, N. M.—A fifty-year franchise has been granted to the Penasco Telephone Company, of which J. C. Gage is president, and H. W. Hamilton is secretary, to construct and maintain a telephone system in the county of Otero.

ST. JOHN'S, OREGON.—Application for a telephone franchise has been made to the St. John's City Council by the Home Telephone Company.

PULASKI, TENN.—A franchise has been granted to the Long Distance Telephone & Telegraph Company at Pulaski.

FINANCIAL.

MARKLE, IND.—The Markle Telephone Company has increased its capital stock from $6,000 to $22,000.

CRESTON, IA.—At a recent meeting of the Creston Mutual Telephone Company an annual dividend of 6 per cent. was declared.

ALLEGAN, MICH.—The Citizens' Telephone Company has declared its regular quarterly dividend of 2 per cent.

KENESAW, NEB.—A dividend of 8 per cent. on its last year's business has been declared by the Kenesaw Independent Telephone Company. The company is now building a number of copper toll lines to take care of its long distance business.

MARSHALL, N. C.—The capital stock of the Wabash Valley Telephone Company has been increased from $125,000 to $400,000.

LORAIN, O.—The Henrietta Rural Telephone Company has increased its capital stock from $4,000 to $8,000, so as to permit of the purchase and operation of a telephone line in Lorain, Huron and Erie counties.

URBANA, O.—The Urbana Telephone Company has declared its semi-annual dividend of 3 per cent.

WILKESBARRE, PA.—The regular quarterly dividend of 2 per cent., payable January 20, has been declared by the Commonwealth Telephone Company.

COMBINATIONS.

CENTRALIA, KAN.—The Southwestern Telephone Company, of Centralia, has sold its lines running southwest from Centralia to E. F. Norris. It is the intention of the new owner to greatly improve the system.

PLAINVIEW, MINN.—The plant of the Plainview Telephone Exchange Company, which operates exchanges at Elgin, Wabasha, Kellogg and Millville, has been acquired by the Greenwood Prairie Telephone Company. It is the intention of the new management to build many new lines and maintain a strictly first class service in all particulars.

ELECTIONS.

MOBILE, ALA.—The following officers and directors have been elected by the Home Telephone Company: W. C. Polk, president and engineer; W. H. Bryant, vice president and general manager; G. C. Monteith, treasurer; R. L. Douglass, secretary; directors, W. C. Polk, W. J. Bryant, G. C. Monteith, Adam Glass, Sr., and P. J. Lyons.

GIRARD, ILL.—The Farmers' Mutual Telephone Company has elected the following officers and directors: E. E. Vaniman, president; R. E. Alferd, vice president; A. A. Neher, secretary; S. O. Smith, treasurer; directors, A. A. Neher, John Riffey and R. E. Alferd.

MEDORA, ILL.—The Brighton Mutual Telephone Company has elected C. P. Long, as president; John Heyer, as vice president; N. Flanagan, secretary; John Ash, treasurer; W. G. Hunt, general manager.

NEWS—WANTED

THE matter contained upon the message and Operating Field pages of this paper is contributed largely by our special correspondents. We believe, however, that there are many valuable items of telephonic interest which are never brought to the attention of the public. There is no reason why this condition should exist, and the Editor, therefore, invites all telephone companies and the officials of such companies, to furnish any information that they can consistently make public relative to financial statistics, new construction, elections, franchises and personal items.

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CEDAR POLES
LARGE STOCKS PROMPT SHIPMENTS
THE VALENTINE-CLARK CO.
ERNEST L. CLARK, PRES.
234 LA SALLE ST., CHICAGO.

The Lindsley Brothers Co.
PRODUCERS AND SHIPPERS OF
WESTERN CEDAR POLES
AND MANUFACTURERS OF
RED FIR CROSS ARMS
SPOKANE - - WASHINGTON
Eastern Sales Office: MARQUETTE BLDG., CHICAGO, ILL.

John Wanamaker says: "If there is one enterprise on earth that a 'quitter' should leave severely alone, it is advertising. To make a success of advertising one must be prepared to stick to it like a barnacle on a boat's bottom. He should know before he begins it that he must spend money—lots of it. Somebody must tell him, also, that he cannot hope to reap results commensurate with his expenditure early in the game. Advertising doesn't jerk: it pulls. It begins very gently at first, but the pull is steady. It increases day by day and year by year until it exerts an irresistible power."

MICHIGAN WHITE
CEDAR POLES

In addition to our regular stock of poles in our Escanaba Yards, we have a special stock of

4 inch --- 20 foot
White Cedar Poles
5 inch --- 20 foot
White Cedar Poles
at Hiawatha, Michigan

6 inch --- 30 foot
White Cedar Poles
at Alpena, Michigan

We do not wish to concentrate this stock and can offer you a good proposition.

We can ship at once a large number of Southern Red Cedar Poles

7 inch --- 30 foot
7 inch --- 35 foot

Write us for delivered prices

KELLOGG
SWITCHBOARD & SUPPLY CO.
CHICAGO, ILL.

EVERY COIL

of **Roebling Double Galvanized Telephone Wire** bears a tin tag and lead seal upon which the word "**Roebling**" is stamped.

Don't accept Wire without the **Roebling Seal.**

JOHN A. ROEBLING'S SONS CO., - TRENTON, N. J.

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THE WEEK'S MESSAGES

BLOOMFIELD, IA.—The following directors have been elected by the Citizens' Mutual Telephone Company: N. S. Johnson, N. E. Merry, H. C. Leach, C. E. Young, S. S. Standley, C. C. McAvoy, J. T. Kline and L. C. Warthen.

ESTHERVILLE, IA.—The Emmet County Telephone Company has elected the following officers: G. W. Greaves, president; F. W. Knight, vice president; E. L. Pecso, treasurer; E. C. Starks, secretary. The above-named officers, with the addition of G. R. Young, comprise the directorate of the company.

LASSWELL, KAN.—The following officers and directors have been elected by the Ranchman's Telephone Company of Barber county: President, J. W. DeGeer, Deerhead; vice president, J. P. Elsea, Lake City; secretary, W. S. Richardson; treasurer, G. W. Osborn, Medicine Lodge; directors, M. T. Williams, J. T. McGrath and L. S. McElwain. J. W. DeGeer was also made general manager and superintendent, and L. S. McElwain purchasing agent.

UTICA, N. Y.—The Utica Home Telephone Company has elected the following directors: E. B. Odell, H. F. Miller, T. H. Ferris, E. L. Barber, George R. Fuller, W. I. Taber, F. W. Zoller, J. C. Woodbury and C. H. Poole.

AKRON, O.—The following directors were elected at a recent meeting of the Akron People's Telephone Company: Will Christy, H. B. Camp, C. W. De Voe, J. R. Nutt, R. S. Iredell, William Clerkin and W. F. Laubach.

BAINBRIDGE, O.—The Bainbridge Telephone Company has elected the following officers: President, Wm. Howard; vice president, S. A. McFarland; secretary, C. P. Haskins; treasurer, C. R. Post; manager, O. J. Post.

MANSFIELD, O.—At the annual meeting of the stockholders of the Mansfield Telephone Company the following officers and directors were elected: S. N. Ford, president; J. L. Baxter, vice-president; M. D. Ward, secretary and treasurer; directors, S. N. Ford, J. L. Baxter, M. D. Ward, B. J. Balliett, Louis Brucker, Reid Carpenter, J. A. Rigby, A. B. Beverstock, F. M. Bushnell, W. B. Martin, C. W. Upson, W. E. Loughridge, F. W. Bloor, A. L. Cameron and Burton Preston.

ALBANY, ORE.—The following officers have been elected by the Santiam Telephone Company: John Propst, president; F. D. Cornett, vice president; M. Propst, secretary and treasurer; A. Sumpter, M. Thomas, William Carey and E. Smith, directors.

PHILADELPHIA, PA.—The following directors have been elected by the Keystone Telephone Company: F. Wayland Ayer, Marcus Beebe, George Burnham, Jr., Nathan T. Folwell, Clarence L. Harper, James Collins Jones, George Kessler, Hercules Lippincott, Michael Murphy and Jacob E. Ridgway.

MISCELLANEOUS.

LOUISVILLE, KY.—The Central Home Telephone Company has recently installed a number of local exchanges along its trunk line south from Louisville. The exchange in Bowling Green is growing rapidly and already far ahead of the Bell lines. An exchange was put into operation at Russelville a few days ago with 120 telephones working, and another, Greenbrier, Tenn., has about 60 telephones. At Springfield, Tenn., the exchange put in about two months ago now has 400 telephones and is growing rapidly.

DEARBORN, MO.—The Dearborn and Edgerton telephone exchanges have been sold by the Platte County Telephone Company to Mr. Jeffries, of St. Joseph, who will take possession of the plant at once.

RINGWOOD, OKLA.—The Ringwood & Cleo Telephone Company has been incorporated and has elected the following directors: Steve Wilson and Frank Draper, of Forest; J. A. Brown and G. C. Burk, of Ringwood; Clark Weaver and J. C. Bebbitt, of Cleo.

MONCTON, N. B., CAN.—At a recent meeting of the council of the Board of Trade and the telephone committee, Messrs. Presson and Goss, representatives of the Independent telephone movement, gave an estimate of the cost of installing in Moncton an Independent telephone system at $50,000.

OTTAWA, ONT., CAN.—The board of railway commissioners has made new orders with respect to tariffs of telephone companies. All such companies are now required to keep their tariffs on file for the inspection of the public during business hours.

PERSONAL.

E. M. ALINDER, who has been in charge of the Southern Bell Telephone and Telegraph Company's exchange at Warrior, Ala., has recently been promoted to the management of its office at Pinckney City.

O. T. TAYLOR has recently been appointed manager of the exchange at Tulsa, I. T., by the Pioneer Telephone Company.

New Construction in the Field

COPELAND, ARK.—Many new lines are being constructed by the Cotton & Reves Telephone Company. It has entered into an arrangement with the farmers in the vicinity of Copeland by which its lines will be extended in all directions.

CANTON, ILL.—The Canton, Sugarville & Fairview Telephone Company expects to rebuild part of its system.

HECKER, ILL.—New lines are being constructed by the Hecker Telephone Company into St. Clair county.

LEONORE, ILL.—A telephone line is to be built between Leonore and Lostant by F. Z. Ames, of Rutland. It is his intention to secure connections at Leonore with the Leonore Telephone Company.

PORT BYRON, ILL.—It is the intention of the Crescent Telephone Company to construct a new trunk line between Port Byron and Hillsdale, and to otherwise improve its system.

ROCKFORD, ILL.—It is the intention of the Rockford Home Telephone Company to make many extensions and improvements in its system during the present year.

RUSHVILLE, IND.—Among the improvements planned by the Rushville Co-operative Telephone Company is the erection of a new exchange building and the installation of a $25,000 switchboard.

GENEVA, KAN.—The Independent Telephone Company recently organized at Geneva expects to install an exchange at this place, and to build lines connecting with the exchange at Neosha Falls.

KINCAID, KAN.—In order to accommodate its rapidly increasing business the Eastern Kansas Telephone Company proposes to install a new toll board in its main office.

MORRICE, MICH.—The Farmers' Telephone Company plans to construct a line from Morrice to Bancroft.

TRAVERSE CITY, MICH.—Many improvements are planned by the Farmers' Telephone Company at Traverse City.

CROOKSTON, MINN.—A new switchboard is to be installed by the local telephone company at Crookston.

HALLOCK, MINN.—The improvements planned by the Kittson Telephone Company include the rebuilding of its exchange, and the construction of a number of rural lines.

SHELL LAKE, MINN.—It is the intention of the Nichols-Chisholm Lumber Company to build a telephone line to Frazee.

ST. JOSEPH, MO.—Considerable cable distribution is being planned by the Citizens' Telephone Company prior to the installing of its new exchange.

BELGRADE, NEB.—New lines are to be built by the Belgrade Telephone Company from Belgrade to Fullerton.

DODGE, NEB.—The Farmer's Telephone Company, which has already expended $4,000, in reconstructing its lines, expects to make other improvements in its system.

WOODYARDS, O.—New lines are to be constructed by the Citizens' Telephone Company at Woodyards.

ALBION, PA.—Improvements are being made by the Albion Telephone Company in its plant.

LUTHERSBURG, PA.—The S. U. B. Telephone Company expects to build a new line from Luthersburg to Troutville.

BLUEFIELD, W. VA.—New lines are being constructed in Bluefield by the Mercer Telephone Company.

HANCOCK, WIS.—New lines are being built by the Farmers' Telephone Company at South Hancock.

CALGARY, ALB., CAN.—The council of the board of trade has called upon the city council to at once construct a municipal or Independent telephone system at Calgary. This is the result of a meeting of the business men, at which the present service furnished by the Bell Company was unanimously condemned.

FERNIE, B. C., CAN.—The Revelstoke Trail and Trout Lake Telephone Company has promised the local board of trade to build long distance telephone lines to Elkmouth and Hosmer. Address General Manager Lindsay, Revelstoke, B. C.

HARRIETSVILLE, ONT., CAN.—It is the intention of the Harrietsville Telephone Company to make many improvements and extensions in its system.

UNDERGROUND.

PITTSBURG, PA.—The city of Pittsburg is considering the advisability of compelling the telephone companies to place all overhead wires in conduits.

MILWAUKEE, WIS.—The Milwaukee Independent Telephone Company is to install an underground telephone system extending three miles south, two miles west and nearly two miles north from the center of the city. The system will extend east as far as the city limits.

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Prompt Shipment. Write Us.
CENTRAL MFG. COMPANY, - - - CHATTANOOGA, TENN.

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INSULATOR PINS AND BRACKETS
Write
M. P. OSBORNE & SON
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CROSS ARMS CAR LOTS OR LESS
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FERGUSON LUMBER CO., LITTLE ROCK, ARK.

LOCUST PINS AND CROSS ARMS YELLOW PINE, IN TOLEDO FOR QUICK SHIPMENT.
THE F. BISSELL COMPANY.
TOLEDO, O.

We Make a Specialty of Telephone Poles.
POLES
POLES
Large Stock
16 to 25 ft.
4 to 6 in. Tops
For Rural Lines
YARDS:
Menominee, Mich.
Escanaba, "
Cloquet, Minn.
Heron, Mont.
Cabinet, Idaho.
Chicago, Ill.
FRANCIS BEIDLER & CO.
459-519 W. 22d St.
CHICAGO, ILL.

WHITE CEDAR POLES
Longest Lasting
Best Grade
OUR NEW STOCK COMING IN 100,000 TO 150,000 BY APRIL 1st
26 YEARS HAVE WE BEEN PRODUCING POLES. WRITE US
Yards { Omer, Bay City and Boyne Falls
W. C. Storling & Son Co., Monroe, Mich.

WHITE CEDAR POLES
Buy from the Producers and Save Jobbers' Profits.
PENDLETON & GILKEY, - Minneapolis, Minn.

Michigan and Idaho
CEDAR
POLES

THE F. BISSELL COMPANY
TOLEDO, O.

POLES
20 and 25 foot lengths for rural telephone lines a specialty.
PORTER CEDAR CO., Saginaw, Mich.

CHESTNUT — CEDAR — CYPRESS
POLES and PILING
GLENN-KLINE LUMBER CO.
WHITFIELD BLDG., PITTSBURG, PA.

POLES
Michigan No. 1 White Cedar
¶ Write us, giving the number of Poles you require of each size and point at which you wish them delivered, we will be pleased to quote you *Special Prices* F. O. B. your station.
WARNER LUMBER CO.
Grand Rapids, Mich.
PRODUCERS AND MANUFACTURERS.

"MORE FAILURES in advertising are made because too little space is used than because too much is used when the right magazine has been selected.

Too many beginners in advertising want to use space in everything and so do not begin because they cannot buy as much space as they ought to have in everything, and they do not realize that to use adequate space in the best publication of its kind will give them the most complete knowledge of their advertising possibilities on the least cost without duplication and will make *successful advertisers of them by its use alone.*"

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HARRISON, N. J.
EDISON
TELEPHONE LAMPS
869

GENERAL STORAGE BATTERY CO. NEW YORK
BIJUR HIGH DUTY
BATTERIES
FOR EVERY SERVICE
GENERAL
STORAGE BATTERY CO
General Offices
42 Broadway, New York
Works, Boonton, N. J.

1907 Lease Records 1907
FOR NEXT YEAR GET THE BEST
That's Our "New Form"
Many companies are now using it, and all are pleased. Ask for circular describing it. Order early and avoid the rush.
WE ALSO FURNISH

Toll Tickets.	Trouble Tickets.
Toll Journals	Rental & Toll Bills.
Toll Ledgers.	Voucher Checks.
Monthly Check Reports.	Letter Heads.
Cash Books.	Card Index Systems.
Directories.	Steel Telephone Signs.

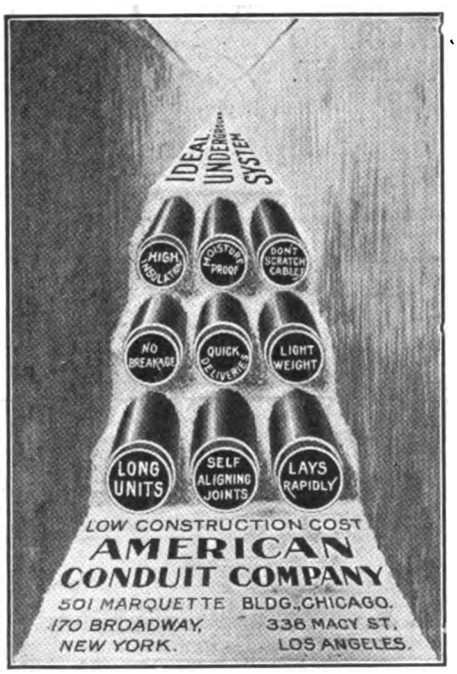
All kinds of blanks, books and forms for Telephone and Toll Line Accounting. Write for sample forms and prices.
TELEPHONE PRINTING COMPANY
Defiance, Ohio

SILK COVERED MAGNET WIRE
For Telephone Construction Purposes
Prompt attention given to quick delivery orders.
FRANK B. GRIFFIN
Manufacturer of FINE INSULATED WIRE
OSHKOSH, WIS.

Couch
Manufacturers of
The "Couch" Automatics
S. H. COUCH CO., Inc., 162 Pearl St BOSTON, MASS.

M. LANZ & SONS
Manufacturers of
POLE STEPS AND POLE SEATS
We Galvanize by the Hot Process
PITTSBURG, PA.

SAMUEL G. McMEEN KEMPSTER B. MILLER
McMEEN & MILLER
ENGINEERS: CONSTRUCTORS
Telephone and Telegraph Properties
MONADNOOK BLOCK CHICAGO



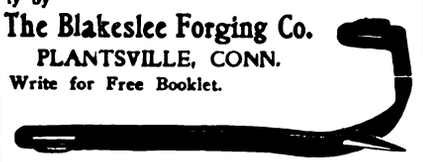
BEWARE OF IMITATIONS

For the protection of our customers we advise that Klein's Pliers are being imitated to LOOK LIKE KLEIN'S. This, however, does not make them Klein's. CAUTION. Look for this stamp, M. KLEIN & SONS, on the inside of handles—NONE are genuine without this stamp.
Use only genuine Klein's. They are the product of years of experience and have stood the test of time.
MATHIAS KLEIN & SONS · CHICAGO, ILL.

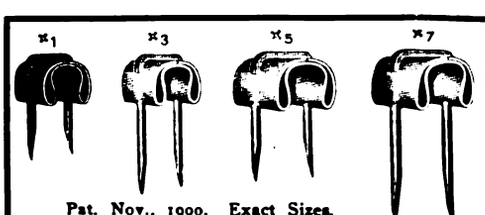
W. H. CRUMB & COMPANY
ENGINEERS CONTRACTORS
TELEPHONE ENGINEERING AND CONSTRUCTION
Plans, Specifications and Estimates Promptly Furnished
First National Bank Building CHICAGO, ILL.

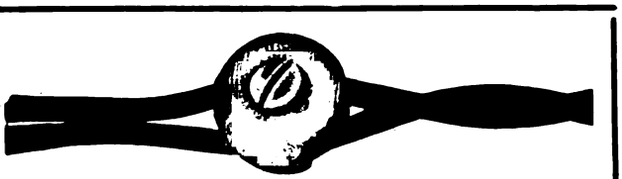
WESTON
STANDARD PORTABLE DIRECT READING
Voltmeters, Ammeters, Millivoltmeters, Voltammeters, Milammeters, Ohmmeters, Portable Galvanometers, Ground Detectors and Circuit Testers.
Our Portable Instruments are recognized as THE STANDARD the world over. Our STATION VOLTMETERS AND AMMETERS are unsurpassed in point of extreme accuracy and lowest consumption of energy.
WESTON ELECTRICAL INSTRUMENT CO.
Main Office and Works, Waverly Park, NEWARK, N. J.
London Branch—Audrey House, Ely Place, Holborn.
Paris, France—E. H. Cadiot, 12 Rue St. Georges.
Berlin—European Weston Electrical Inst. Co., Ritterstrasse, No. 88.
New York Office—74 Cortlandt Street.

Weston Standard Portable Direct Reading Voltmeter.

The Celebrated
DONNELLY CLIMBER
is made of the toughest and best steel obtainable. It is guaranteed not to break. You can trust your life to it with perfect safety.
The Donnelly climber is now made exclusively by
The Blakeslee Forging Co.
PLANTSVILLE, CONN.
Write for Free Booklet.


AN AMERICAN JOURNAL For AMERICAN INDEPENDENT TELEPHONE MEN
Read from Atlantic to Pacific; Canada to Mexico; and overflows into all other countries.



Pat. Nov., 1900. Exact Sizes.
Blake Insulated Staples
Blake Compressed Cleats
Manufactured and For Sale by
Blake Signal & Mfg. Co.
246 Summer St., Boston, Mass.

Exact size. Patented July, 1906.

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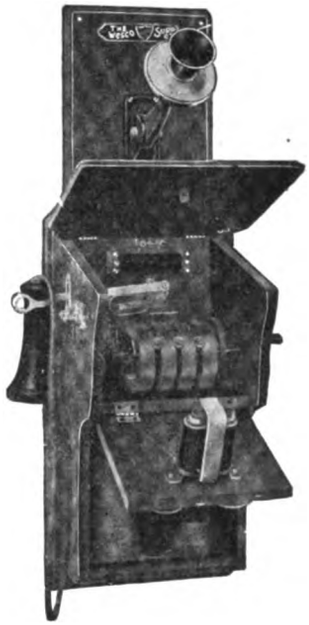
Quality Higher Than Price

¶ It's an easy matter to talk quality and price, but quite another to produce the goods to back it up.

¶ We have always put more faith and dollars into securing good materials and employing skillful and intelligent labor in the manufacture of our telephones than in advertising the fact, and the careful buyers are beginning to find it out.

¶ Prejudice and ignorance may hold the fort for a day, but merit and fair dealing in the end are invincible.

¶ We solicit your inquiries and an opportunity to quote prices and submit samples of our product.



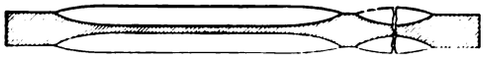
THE WESCO SUPPLY COMPANY

"Everything Electrical"

Branch Warehouse
Fort Worth, Texas

ST. LOUIS, MISSOURI

A Longitudinal Section of the Gould Battery Plate



shows the ribs (white spaces) composing the contact surface for active material and the central web and cross bars (shaded spaces) which secure perfectly even current distribution, even wear and low internal resistance.

It will pay you to follow our advertisements and to send for our new telephone booklet.

SALES OFFICES
Boston—89 State St.
Chicago—Rookery Bldg.
San Francisco—Monadnock Building.
Toronto, Ont.—62 Wellington St., West.

Gould Storage Battery Co.

MAIN OFFICES
1 West 34th St.,
New York City.
Works, Depew, N. Y.

JUST A SUGGESTION

Take one of your busy 4-party lines and equip it with "POOLE" Lock-Outs. Leave it in service a month and then see how many of the four will stand a raise of $3.00 a year rather than go back to the old way. We know the answer, but we want your subscribers to impress on you the fact that the "POOLE" Lock-Out is a rate-raiser.

It won't cost you anything to try it, because we will loan you the Lock-Outs free and there is no other equipment required. Write today for our Booklet AL-2.

Mountain State Electrical Company

WHEELING, W. VA.

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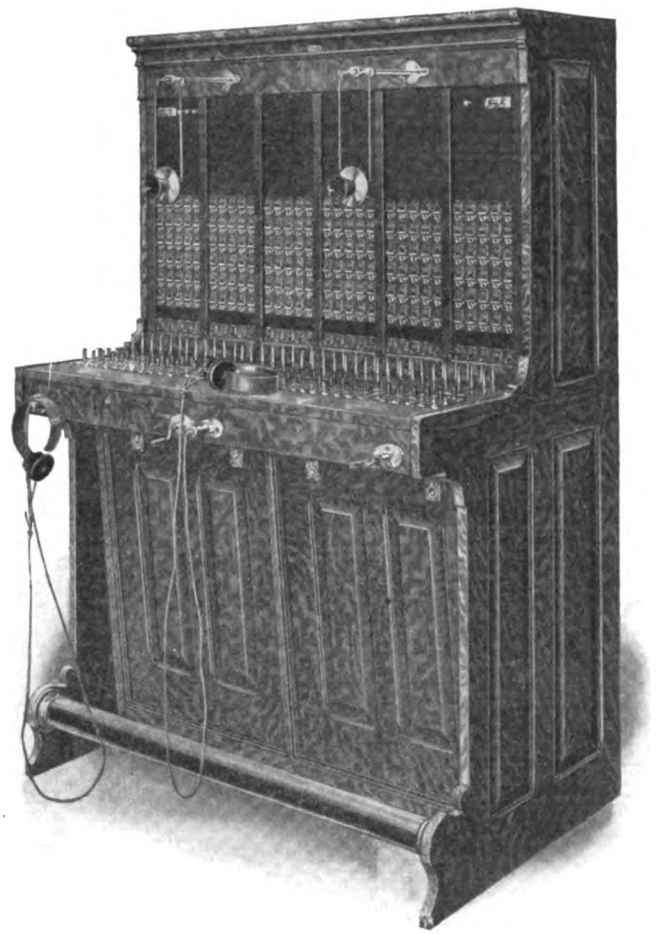
DEAN TELEPHONE APPARATUS

EXPRESS TYPE SWITCHBOARDS



Our express type switchboard cabinets are made in unit form so that any number of sections can be placed in line and give the appearance of a continuous switchboard cabinet. The accompanying illustration shows our No. 8 type cabinet with an ultimate capacity of three hundred drops, thirty cord equipment, thirty lamp transfer circuits and two operators' positions equipment.

If you have not yet received a copy of our new booklet, No. 6, write, call, or telephone; we will mail you a copy free on request.

Factory and General Office
Elyria, O.

Branch Office
Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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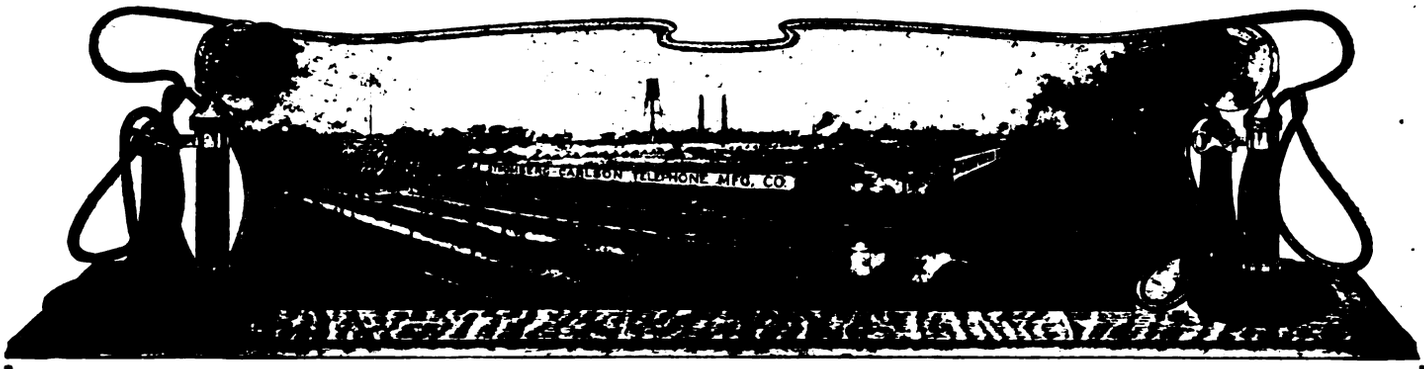
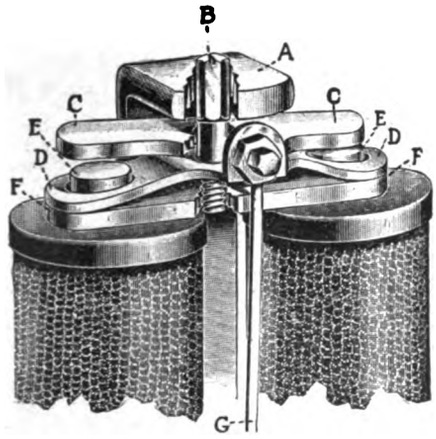
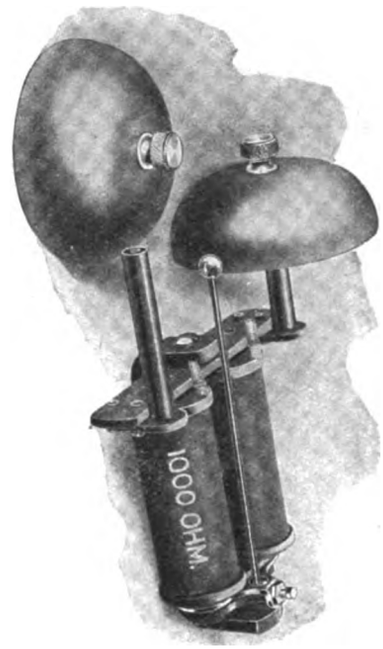


QUALITY—DURABILITY—EFFICIENCY

THESE features are essential and have made our self-contained Ringers famous. They are in use on all our Central Energy and Magneto Instruments. The permanent Magnet A is made of the finest grade of magnet steel, carefully tempered. The adjustment screw B is made of heavy brass which will perform its work without twisting. This screw is hexagon in shape and slotted, adjustment can thus be made by screw-driver or wrench. The armatures C and cores E are made of annealed soft iron. The plate which supports the armature is made of spring brass of sufficient thickness to possess the proper tension. The yoke F is of heavy brass, forced with great pressure over the cores E, holding them firmly in place. The adjustment of the Ringer is effected by turning the screw B, which has a shoulder resting on plate D, the lower end being threaded into plate F. Long life and perfect satisfaction are assured.



Showing Sectional View of Armature End



Complete Ringer

ROCHESTER, N. Y. **STROMBERG-CARLSON TELEPHONE MFG. CO.,** CHICAGO, ILL.

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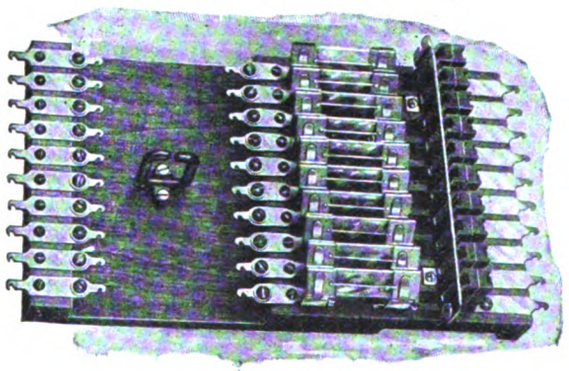
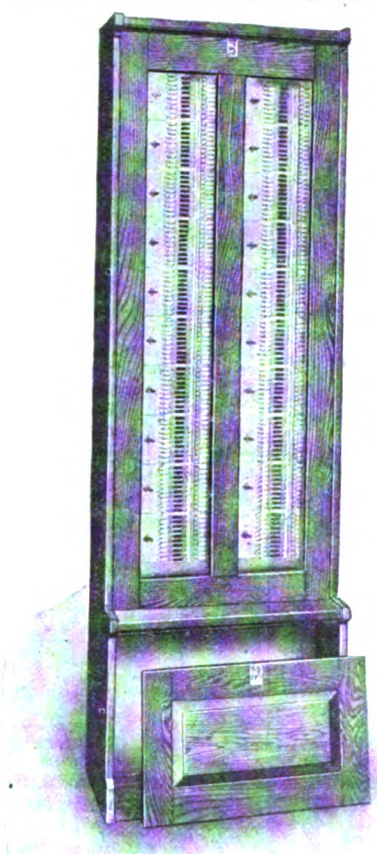
MONARCH

ARRESTERS AND ARRESTER CABINETS

The arresters are mounted five per strip so that it is not necessary to buy more lines of protector than there are lines in the switchboard. The construction shows the usual Monarch Characteristics of strength and durability. The connectors are heavy brass and the spring clips bring sufficient pressure to bear against the fuses and carbons to positively insure good contacts. The ground plate is a wide strip of brass slotted at one end and fitted with a screw at the other end, so any number of sections can be mounted one above another.





The arrester cabinet is designed to fill a demand for a neat and yet inexpensive cabinet for magneto exchanges using fuse and carbon arrester sections. It is made in two sizes: One for 100 metallic lines and the other for 150 metallic lines. The removable glass front and bottom panel afford easy access to the arresters and the cables coming to them.

Monarch Telephone Mfg. Co.
CHICAGO, U.S.A.

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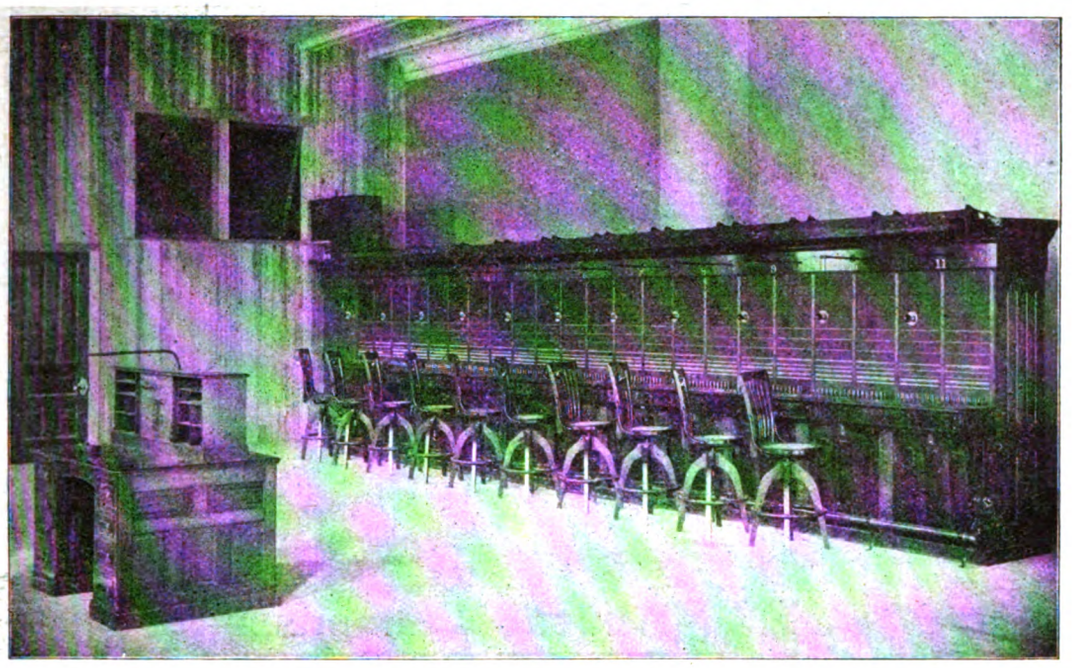


10 Position Common Battery Board

Simplest Circuit **Correct in every detail**

STERLING ELECTRIC CO., LAFAYETTE, IND.

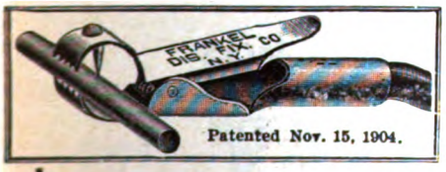
MAKERS OF GOOD GOODS

TO BE FOREWARNED IS TO BE FOREARMED

If you are not using a measuring instrument to test your lines, get one at once, as you will need it many times before the summer comes. It would be just as sensible for a grocer to try and sell sugar by guessing at its weight as it is for you to try to locate a fault in a line by the same method. PIGNOLET VOLT-AMMETERS are designed to give the best results required for testing purposes. They are not complicated nor do they require experts to operate them. Another point in their favor is their low cost. There is no instrument on the market which will give you as accurate results at anything near the price. Hadn't you better write for prices and further particulars By buying one now you will save its cost many times over before you have had it a year.

LOUIS M. PIGNOLET, Originator of the Voltmeter Habit

78 CORTLANDT ST., N. Y.



Patented Nov. 15, 1904.

Sample Doz...$1.50 Dozen
Lots of 100...11.00 Hundred
Lots of 500...10.00 Hundred
Lots of 1,000. 9.00 Hundred

Your Supply House carries them. If not order direct.

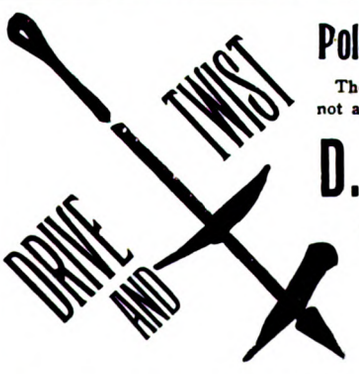
FRANKEL'S TESTING CLIPS

For testing Insulated or Bare Wire Lines.
Save 15 to 30 Minutes on every Test.
Unnecessary to "skin" the wire.
Obviate "breaks" and use of Tape.

Get them for your Inspectors, Linemen and Installers.

THEY SAVE MONEY

FRANKEL DISPLAY FIXTURE CO., 740-742 Broadway, N. Y.



Poles Must be Anchored

The question is how to do it. Why not adopt the modern D. & T. way?

D. & T. Anchors

can be driven anywhere any time of the year. They pull against solid earth and hold as well as a dead man.

Know More About Them

THE D. & T. ANCHOR CO., La Crosse, Wis.

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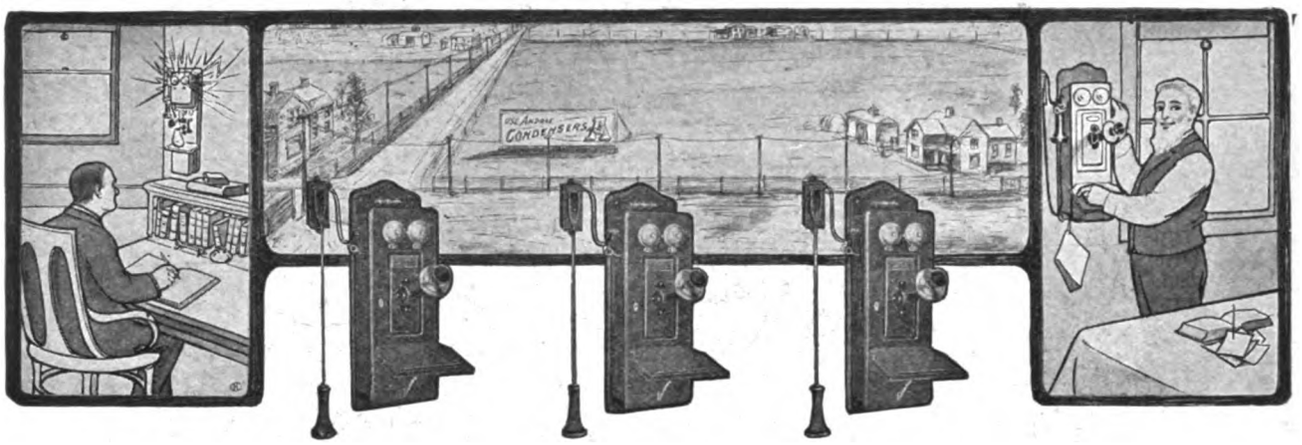
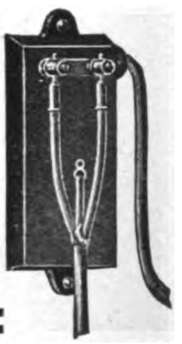


"RUBBERING" CANNOT CRIPPLE THE SERVICE

There's one practical way to maintain good service even though a dozen "rubberers" have their receivers off the hooks. It's the Andrae way. The

Andrae Condenser

is a small instrument with a big mission. Enables one subscriber to ring up another even though all intervening receivers are off the hooks. Simple and inexpensive, and can be put up in ten minutes. Write for description.



ANDRAE MILWAUKEE

JULIUS ANDRAE & SONS COMPANY

99 West Water St MILWAUKEE

PURE LEAD GRILLS

WELDED TO

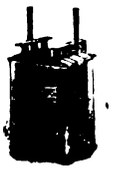
Strong Alloy Frames

GENERAL STORAGE BATTERY CO BIJUR HIGH DUTY NEW YORK

BATTERIES

FOR

EVERY SERVICE

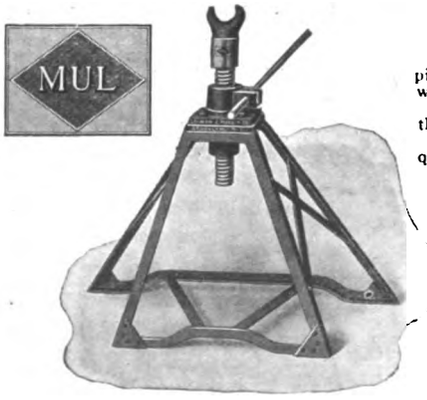


The Most Perfect Combination Ever Devised.
Low Charging Voltage. Low Internal Resistance.

HIGH CAPACITY

General Offices: 42 Broadway **GENERAL STORAGE BATTERY CO** Works: Boonton, New Jersey

"Triumph" Reel Jack



The "Triumph" and "Perfection" Reel Jacks

"Perfection" Reel.

The nut revolves instead of the head, enabling the head to be made in one piece. It is, consequently, very rigid and never works loose as is the case where the head acts as a pivot.

The stand proper is not threaded, so the whole screw may be taken out and the jack taken apart for transportation.

The "Triumph" jack is very compact, taking up but little room and consequently is advantageous where the manhole is alongside of a car track or other tight place.

Write for our new catalogue illustrating these and other telephone specialties.

Colman J. Mullin Co.

430 Kent Ave. Brooklyn, N. Y.

TELEPHONE ENGINEERING SPECIALTIES

632 Monadnock Block, Chicago, Ill.

Please mention THE AMERICAN TELEPHONE JOURNAL when writing to ADV...

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ROBINSON
Distribution Rack

For Distributing from Pole-House or Can-Top Direct to Telephone.

No. 1 comes in 5 to 8 pair racks.

No. 2 comes in 10 to 16 pair racks.

Send for descriptive matter and prices.

The W. G. Nagel Electric Co.

No. 1. **26-30 St. Clair St., TOLEDO, O.** No. 2.

U. S. COMBINED
Cash Register and Pay Station
[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Trouble.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write us now for particulars and catalogue.

United States Coin Register Co.
TOLEDO, OHIO

Not only on *Dry Batteries*

is

The Fahnestock Spring Binding Post

a great convenience, but in all parts of the exchange as well. It makes better, surer connection than the old style post and is much quicker. It is as reliable as a soldered joint, but you don't have a lot of trouble every time you change connection or make a test. On distributing boards it is a necessity. A number of different styles kept in stock. Special posts made to order.

Dealers supply dry batteries fitted with these posts at no extra charge. Ask for them.

Booklet Showing Different Styles on Request

FAHNESTOCK ELECTRIC CO.
129 Patchin Place, NEW YORK

ORANGEBURG
Fibre Conduit
FOR UNDERGROUND SERVICE
The Fibre Conduit Co.

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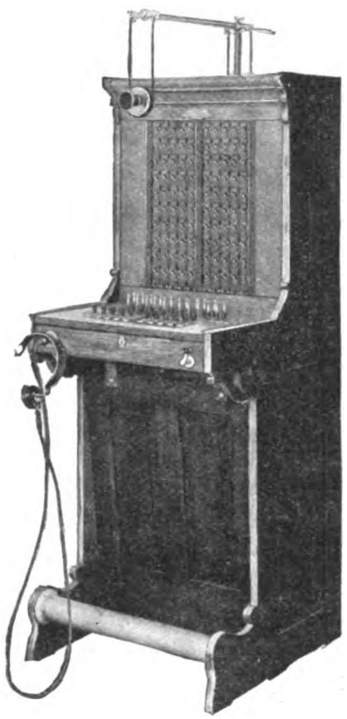
KELLOGG

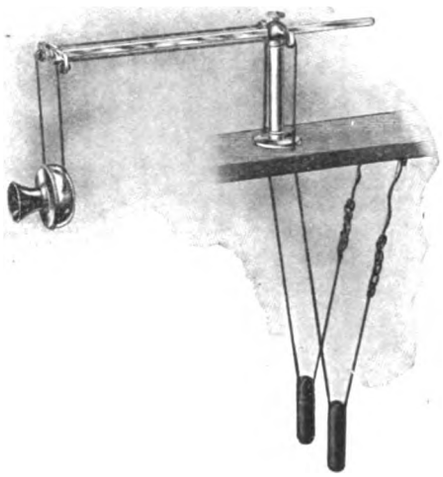
TELEPHONE APPARATUS

MAGNETO SWITCHBOARDS

ARE EQUIPPED WITH KELLOGG

SOLID BACK REVERSED TYPE TRANSMITTERS





This transmitter does not vary in any vital part from the regular Kellogg telephone transmitter. It is of the solid back reversed-type, the cell which contains the electrodes and granular carbon being formed in the diaphragm and constituting a part of it.

This form of a transmitter gives wide variation of resistance with a correspondingly powerful transmission. The action keeps the granules well shaken up, thus preventing packing. A soft rubber gasket separates the metal diaphragm from the remainder of the instrument, thus preventing metallic contact with the frame of the transmitter. Two dampening springs hold the diaphragm in place. The front of the transmitter to which all the working parts are attached, is made of white metal cast in accurate steel dies under enormous pressure. The bridge forming the solid back of the transmitter to which the rear electrode is clamped, is made of a straight piece of heavy brass, without any bends or angles, and is fastened to the front piece by four machine screws. The back is spun of sheet brass, heavy enough to avoid all vibrations caused by the voice. The transmitter is suspended from the arm by two 72-inch green silk cords. The No. 24 transmitter arm shown above is made of brass, nickel-plated, 24 inches long, with a standard 6 inches high. This arm provides pulleys over which the cord slides. The arm has a horizontal adjustment of 18 inches. The transmitter is so balanced by cord weights that it will remain in whatever position it is placed.

Write for "Bulletin No. 9A," which completely describes our Magneto Switchboards.

BRANCH OFFICES:

PHILADELPHIA, PA.	CLEVELAND, O.	KANSAS CITY, MO.	LOS ANGELES, CAL
Keystone Tel. Bldg.	Electric Bldg.	1413 Main St.	318 W. Second St.

KELLOGG SWITCHBOARD & SUPPLY COMPANY
CHICAGO, ILLINOIS, U.S.A.

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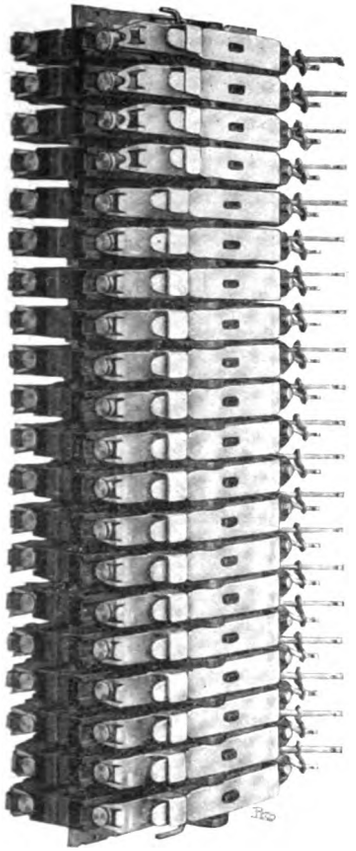

20 Pair Bank—No. 10.

Cook's No. 10 Protector

COOK'S No. 10 Protector is so radically different in principle and design from previously existing types of switchboard protective apparatus, and has so many vital points of improvement, that from an engineering standpoint, it belongs in a class by itself. The following features alone are enough to recommend it to every careful, conservative, conscientious telephone engineer:

1. *The heat coil is not made of wire; it cannot burn out or short circuit.*
2. *There are no loose contacts in the circuit.*
3. *There cannot be a defective coil in the circuit.*
4. *The springs of each pair are separated and insulated from all adjacent springs.*
5. *No bolt connections are used to transpose the line and the switchboard terminals; consequently there can be no loose connection in the circuit.*

Cook's No. 10 Protector is a resoldering but not a self-soldering protector.

It is mechanically and electrically simpler and better than *any* protector on the market.

16,000 pairs of No. 10 were installed at St. Louis main office—the largest single protector rack made.

Write for descriptive bulletin and prices.

Frank B. Cook.

MANUFACTURER,

238 West Lake Street, CHICAGO, ILL.

Rent your subscribers a system of

Couch Automatic Intercommunicating Telephones

with trunk button for exchange connection.

It's an "operator-less" private branch exchange, giving automatic intercommunication between departments.

Any station can secure immediate city exchange connection by the pressure of the trunk button.

Ask us about it

STANDARD SIZES:

8	intercommunicating buttons,	1	exchange	button
14	"	"	1	"	"
18	"	"	1	"	"
24	"	"	1	"	"
28	"	"	1	"	"

100% CHEAPER THAN BRANCH EXCHANGE
100% QUICKER; 100% MORE SATISFACTORY.

S. H. COUCH CO., Inc., Manufacturers
162 PEARL STREET, BOSTON, MASS.

Pole Setting Time

and the high prices you have had to pay for Poles surely has impressed you with the necessity of making them last longer.

Avenarius Carbolineum

(Registered)

has been on trial for over 30 years by leading telephone and telegraph companies, Railway companies, the U. S. Government, etc. By simply painting your poles with it, it will more than double their life. It is inexpensive. Write for prices and literature

Carbolineum Wood Preserving Co.
MILWAUKEE, WIS.

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BALLAST

¶ The Engineering Department of THE VOTE-BERGER COMPANY, LA CROSSE, WISCONSIN, will be very glad to enter into correspondence concerning and explain in detail, the various important applications of the iron wire ballast patents. *Address Department B.*

¶ Do not wait until you are ready to buy a new switchboard. You will be greatly interested right now. V-B Ballasts are not only used in switchboard work, but there are several other applications, and the knowledge of them will be of value to you.

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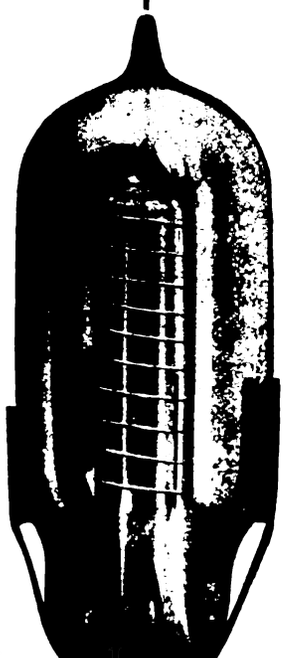

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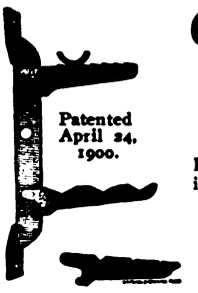

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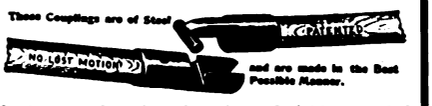

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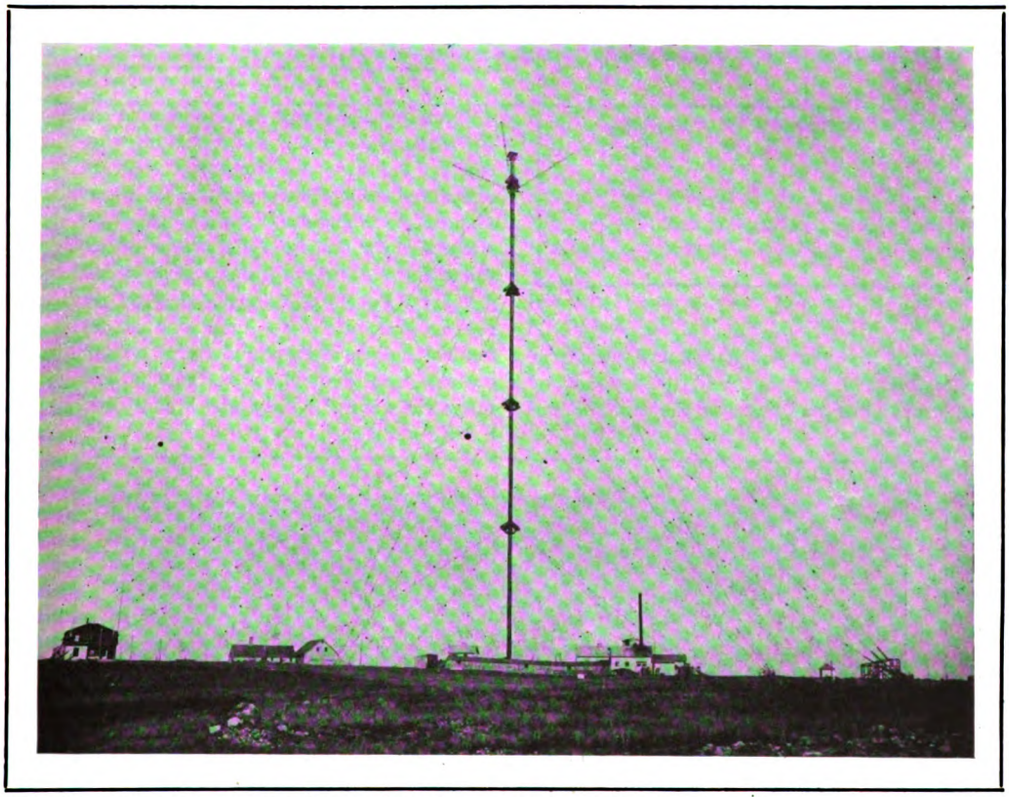
VOLUME XV. SATURDAY, FEBRUARY 2, 1907. NUMBER 5

Experiments and Results in Wireless Telephony*

By John Grant.

MODIFICATION of the character of the electro-magnetic waves to impart the fluctuations characteristic of the current in a circuit containing an ordinary telephone transmitter has been the object of an exhaustive series of experiments by Professor Fessenden, second only in importance to those which led to his development of a satisfactory system for radiating energy. It is evident that the forms of the electro-magnetic waves must be varied exactly in correspondence with the sound waves of spoken words at the transmitting station, and at the receiving station the apparatus must be capable of retransforming the energy into sound waves of like character to those originated at the distant end of the system. An early arrangement tried at the transmitting end of the line was of the form indicated in Fig. 5.† Here the conductor from the aerial passes through a winding 2 of the transformer 3 to the source of energy (here represented by induction coil 6), the other terminal of which is connected to ground. Capacity 18 and inductance 19 in series shunt spark gap 4-5 for the purpose of maintaining constant frequency, as previously described with referenced to Fig. 3. Transmitter 9 and battery 8 are serially included with a second winding 7, on transformer 3. Capacity 18 and inductance 19 are arranged to have the some period of oscillation as the sending conductor 1, and also as the receiving conductor. Advantage of the fact that if the resistance of a transformer secondary be changed it alters the inductance of the primary is taken to produce the required modifications of the waves emitted. Thus by speaking into the transmitter the permeability of the core 3 is correspondingly modified, producing a change in the self-inductance of the winding 2. This in turn affects the natural period of vibration of the sending conductor, throwing it out of resonance with resonating circuit 18-19. Owing to this variable failure of resonance there is produced a series of corresponding changes in the intensity of the waves given off by the conductor 1, and these variations are reproduced in the circuit of the receiving conductor. It is to be noted that the essential point in the operation of this method of transmission is the throwing of the aerial out of tune with the resonant circuit 18-19, and an alternative method of doing this is to alter the capacity of conductor 1, instead of its inductance. To affect this type of variation, conductor 1 was connected to a fixed condenser plate 13 (Fig. 6), while plate 14 is formed by or connected to a diaphragm capable of vibrating in unison with sound waves, produced by words spoken into a transmitter mouthpiece. This latter arrangement has been termed by Professor Fessenden a "condenser transmitter." Relating the practical results obtained with this type of apparatus in conjunction with the high frequency dynamo for generating waves he states that with a diaphragm two centimetres in diameter a movement of 1-100 of an inch inwards reduced the current from 3.1 amps. to 2.5 amps. This result was obtained on a circuit used for telephoning from Brant Rock to Plymouth, a distance of about ten miles. The dynamo was connected to the aerial through a transformer with 10 and 100 turns respectively, stepping up the voltage from 45 volts to approximately 3,000 volts, with a frequency of 50,000 cycles. This result was obtained without a resonant circuit between the movable terminal of the condenser transmitter and ground.



Four Hundred and Twenty Foot Mast and Buildings at the Brant Rock Experimental Station, from Which Wireless Telephone Messages Are Sent.

In Fig. 9 is shown a third arrangement using a carbon microphone transmitter, 16-17, in circuit between the sending generator

*Continued from the issue of January 26.
†U. S. Patent No. 706,747.

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15 and aerial 1. A proper type of transmitter for this purpose should be capable of carrying from 10 to 100 amperes. In the practical instrument which has been developed the metal en-

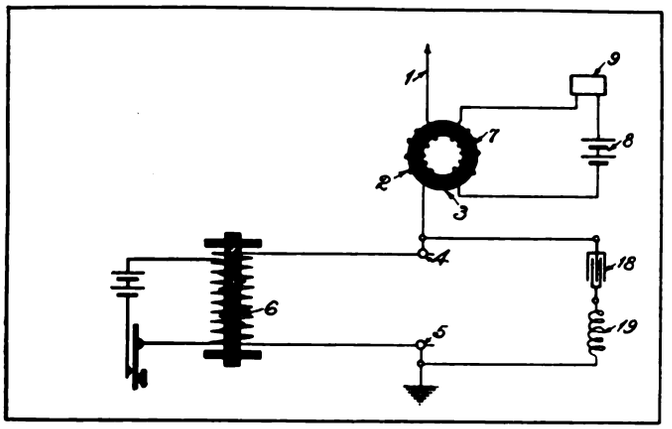

Fig. 5. Arrangement for transmitting speech by varying inductance of sending circuit.

closing the carbon chamber is made with two deep circumferential grooves, visible in Fig. 11, permitting the rapid radiation of such heat as may be produced.

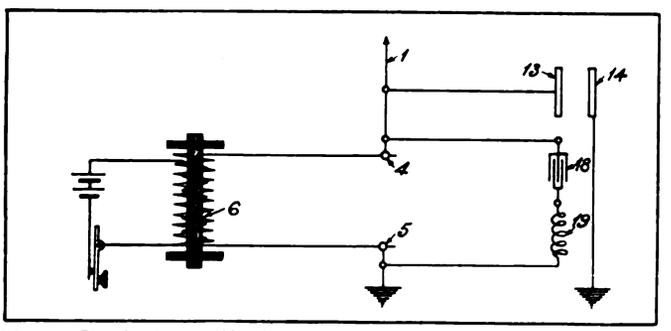

Fig. 6. Circuits for modification of transmitted waves by action of a "condenser transmitter."

In operation, the sending conductor has its natural period in resonance with the period of the dynamo, and the amount of resonant voltage depends upon the resistance of the microphonic contact. Speaking against the diaphragm therefore causes the voltage at the aerial terminal to change in correspondence with the sound waves. This microphonic contact may be substituted for the variable inductance or variable capacity in conjunction with the resonant circuit 18, 19 as shown in Figs. 5 and 6. While the condenser transmitter has given the best results, the carbon transmitter works very well in practice. The instruments as now constructed have platinum-iridium electrodes, and carry three amperes without injurious heating. To get the best results the ohmic resistance of the carbon transmitter should be equal to the radiation resistance of the aerial. In practice the carbon transmitter is usually placed between the exciting source and ground, as shown in Figs. 12, 14, for the purpose of preventing possible shocks.

A carbon transmitter may also be placed in the field of the high frequency alternator. Still another method is to use the armature winding differentially, with a second field, to shift the position of the field. Many other forms of transmitting devices for varying the natural period of the sending aerial circuit through the action of a transmitter upon a spark gap, etc., were experimented upon, but were laid aside on account of the objectionable noises which they produced in the receiving circuits.

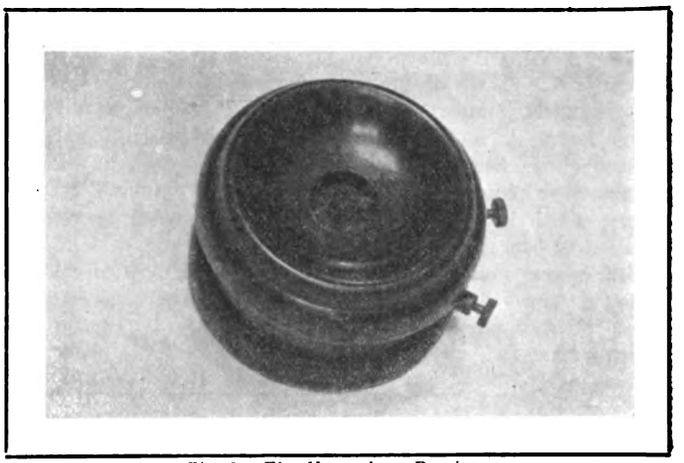

Fig. 8. The Heterodyne Receiver.

Receiving apparatus at the time Professor Fessenden began his work was in an unsatisfactory state, all known forms of receiver being of the "imperfect contact" type. These were not considered satisfactory, as it is well established that a receiver adapted to reproduce speech must be constantly operative. Moreover the known types were all voltage operated devices, and the thing required was recognized to be a current operated receiver. Forms of current operated receivers were devised, to the number of more than one hundred. In all these the fundamental principle is that all contacts are electrically good contacts, and the devices are capable of being operated by electromagnetic waves.* They are broadly distinguished from devices depending for their operation upon the varying of contact resistance, as in the "coherer" types of receiver. Amongst these types of receiver which have become well known may be mentioned the hot wire barretter, the liquid barretter, the eddy current receiver, the beats method, the microbaric receiver, the repulsion disk, etc. Of these the most satisfactory for telephone work was found to be the liquid barretter. This type of instrument consists of a small vessel containing a liquid in which is immersed a diaphragm perforated with a minute hole, before which is placed a fine point connected with the antenna. Under the

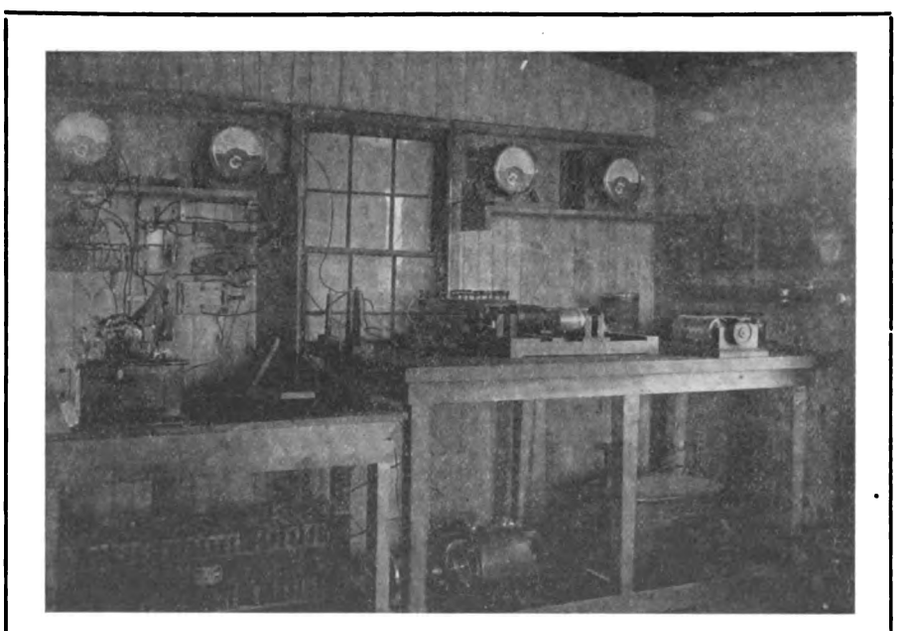

Fig. 7. Arrangement of apparatus for transmitting from graphophone shown at the left.

*U. S. Patent No. 706,736.

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action of the electro-magnetic waves the stratum of liquid contained in the perforation of the diaphragm becomes heated, its resistance is varied, and if the terminals be shunted by a battery and receiver sounds will be produced corresponding to such fluctuations in resistance. The inventor of these various forms of receivers believes, however, that they are all surpassed by what he terms his "heterodyne" receiver. Although this cannot be fully described on account of the condition of patents, the following data are available:

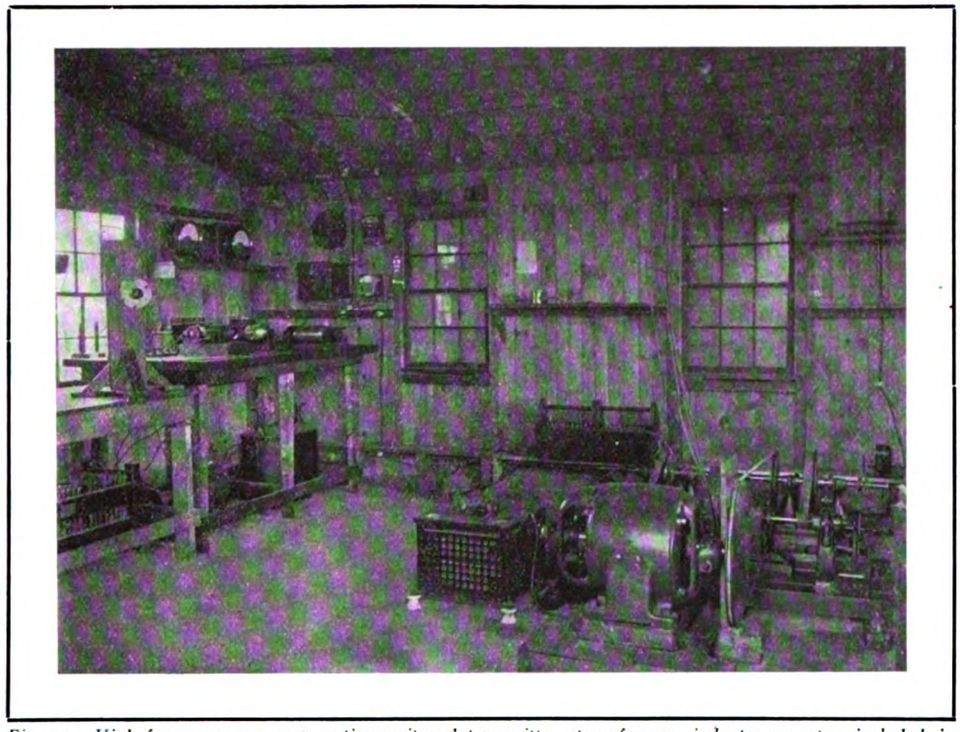

Fig. 10. High frequency wave generating unit and transmitter, transformer, inductances, etc., included in complete sending circuit.

All forms of voltage operated receivers, and most forms of current operated receivers are very inefficient. Even the liquid barretter, which is recognized as an exceptionally sensitive instrument has an efficiency of only about 1-10 of one per cent for weak signals. The magnetic receiver of the types developed for wireless telegraphy is in the same class. While a liquid barretter or magnetic receiver will give an indication between 1/100 and 1/1000 of an erg., an ordinary telephone will indicate the passage of less than 1/1,000,000 of an erg. From this it is evident that a proper method for directly using an ordinary telephone receiver would increase the efficiency enormously. This has been accomplished in the heterodyne receiver, which is a combination of the "beats method,"* and the method of operating by continuously generated waves,† which has already been described. The beats method requires the use at the sending station of two or more antennae, so constructed and proportioned as to have different periods of oscillation—in practice a difference of about 5 per cent being preferred. At the receiving station two or more conductors are connected to separate windings and of a receiver magnet. Separate alternators are used, tuned to frequencies corresponding with the periods of the aerials to which they are respectively connected. As the device is operated waves of different periodicities are generated by the respective sending conductors, and these waves produce in the corresponding receiving conductors correspondingly varying oscillations in potential. As the oscillations persist there follows a varying difference of potential at the receiver terminals, and corresponding signals caused by the electrical "beats," analogous to sound "beats" will be heard. The heterodyne receiver (Fig 8) is built up of a telephone having a fixed magnetic core formed of iron wires .001 inch in diameter, and this core is excited by a high frequency current. A small coil, with or without a core, is cemented to a thin mica diaphragm, and this coil is arranged to be excited by the oscillations produced by the received electro-magnetic waves. While it is impossible to make the frequency of waves generated at the sending station exactly equal to the oscillations generated at the receiving station, it is believed that regulation sufficient for all practical purposes may be obtained by automatic means. This gives an extremely efficient form of receiver. Advantages pointed out by the inventor of this type of receiver are that it is unaffected

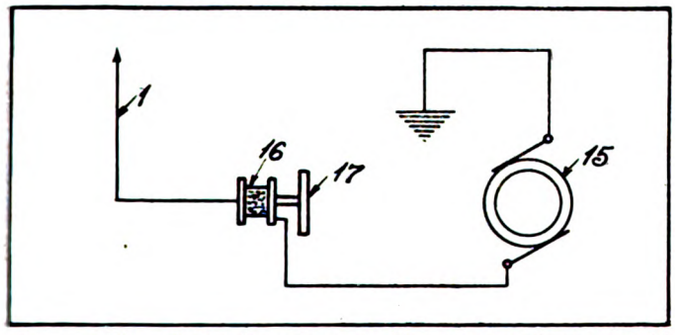

Fig. 9. Sending circuit with carbon transmitter connected directly to aerial.

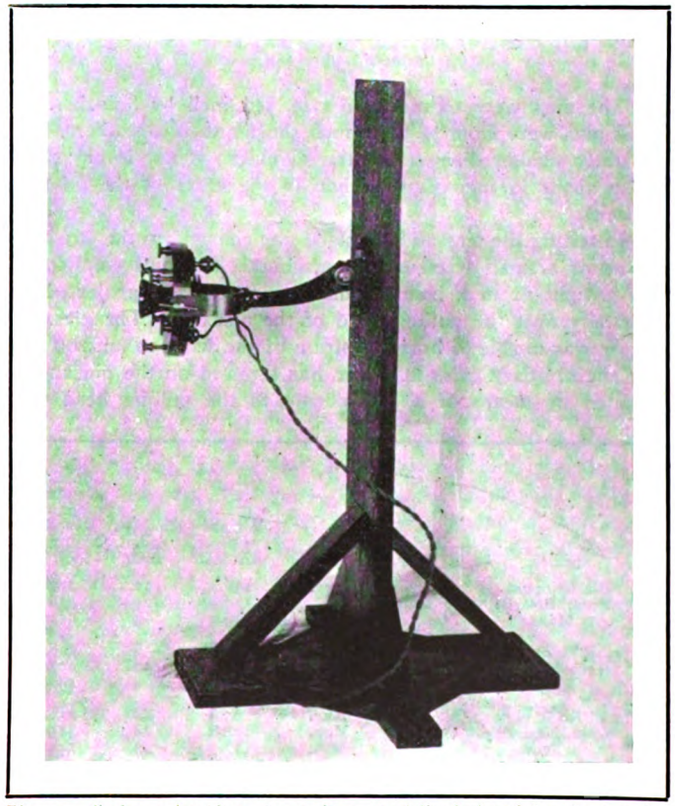

Fig. 11. Carbon microphone transmitter, specially designed for the carrying of heavy currents and rapid radiation of heat.

*U. S. Patent No. 706,740.
†P. P. S. Patent No. 706,737.

(Continued on page 79.)

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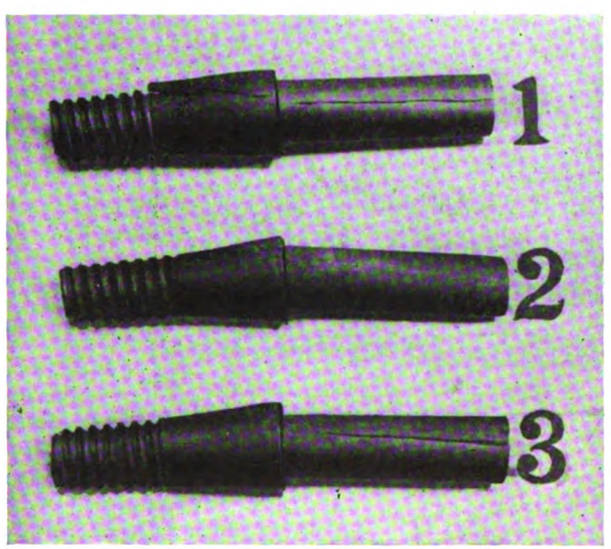
The Strength of Insulator Pins

AT the request of certain consumers, the Forest Service recently made tests on fifty-three insulator pins of rock elm, live oak, and black locust, the results of which are given in the department's Bulletin No. 12. The tests were made at the timber-testing station of the Forest Service at Purdue University, Lafayette, Ind. The results indicate the relative strength of the pins tested. They depend upon too small a number of tests, however, to show in an authoritative way the relative value of these woods.



Failures of insulator pins—1, splitting from threads to shoulder, characteristic of failure of locust and elm pins. 2, tension at shoulder, characteristic failure of oak pins. 3, shearing horizontally; occasional failure within the block.

The pins were of standard size, 1¼ inch by 8 inches. The oak pins were from ⅛ to ¼ inch shorter than the others, and of slightly smaller diameter at the shoulder. Their lever arm was also about ½ inch shorter than in the cases of the other two species.

In testing the pins an iron block was clamped to the fixed upper head of a small screw-testing machine. The pins were inserted to a tight fit in a hole in this iron block, and projected horizontally over the pulling head of the machine. The glass insulator was unable to bear the strain of the wire, so an iron model of the ordinary glass insulator was screwed on the pin and connected by means of a heavy wire to the pulling head of the machine. When a strain was put on this wire, the pin acted as a beam fixed at one end and loaded at the other, which is practically the condition met with in practice. The breaking moment (maximum load times lever arm) is taken as a measure of the strength of the pins. The iron block mentioned was used in preference to a wooden cross arm for supporting the pins, for the reason that this iron block forced the pins to break under the test. Furthermore, it furnished uniform conditions for all pins. Thus, the results of the tests do not show the strength of a combination of pins and cross arm, but they show the bending strength of the pin itself.

Species.	No. of Tests.		Weight of pin. Grams.	Rings per radial inch.	Breaking moment (Maximum load x lever arm). (Inch lbs.)
Black locust From Boston, Mass.	23	Avg.	106.3	12	3970
		Max.	119.3	25	5380
		Min.	86.6	3	2520
Black locust from Nashville, Tenn.	7	Avg.	125.9	8	4087
		Max.	147.1	11	4930
		Min.	111.8	4	3010
Rock elm from Nashville, Tenn.	8	Avg.	93.8	42	2512
		Max.	108.7	48	3150
		Min.	77.5	33	1450
Live oak from Houston, Texas.	12	Avg.	127.1	Not distinguishable.	3025
		Max.	141.0		4590
		Min.	110.4		1990

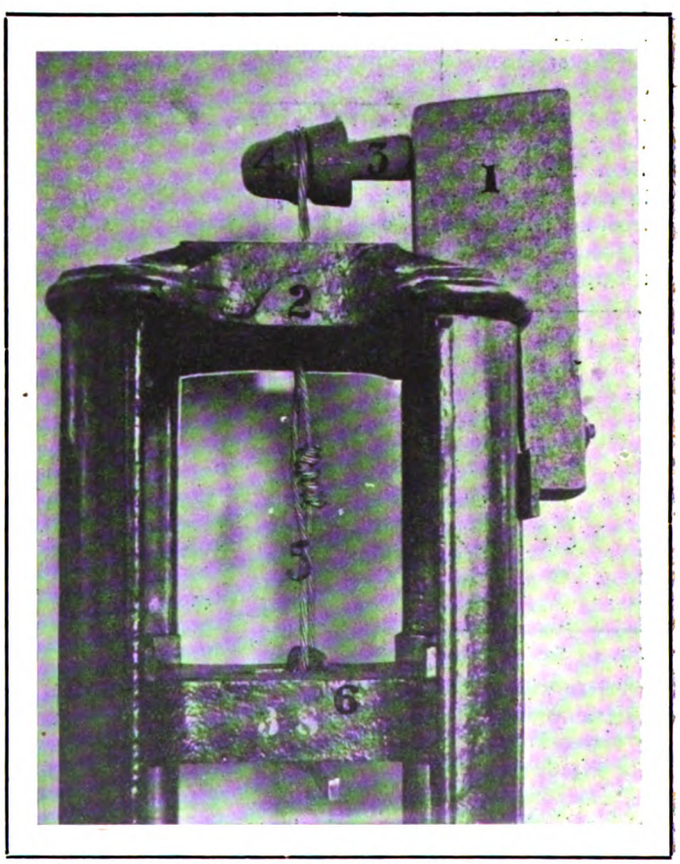
Tabulated results of Forest Service tests on insulator pins.

The accompanying table gives the results of the tests.

From the table it appears that the breaking strength of the two shipments of black locust pins was practically the same, and may be taken as 4,000 pounds. Live oak pins came next in order of strength, with a breaking moment of about 3,000 pounds. Rock elm pins were the weakest, having a breaking strength of 2,500 pounds.

The oak pins were the heaviest, the locust next, and the elm the lightest.

The locust and elm pins failed mostly by splitting from the threads to the shoulder, or by tension at the shoulder. Occasionally the portion of the pin inserted in the block failed by shearing horizontally. The oak pins nearly all failed by tension at the shoulder.



Testing device for insulator pins—1, cast iron block; 2, upper fixed head; 3, pin under test; 4, iron dummy insulator; 5, heavy wire; 6, pulling head

WINNING PROVIDENCE FOR THE INDEPENDENTS.

HEARINGS which were held on January 15, 16 and 17 before a special committee of the City Council of Providence, R. I., gave the Home Telephone Company of Rhode Island an opportunity to thoroughly present its claims for the consideration of its application for a telephone franchise.

The Home Telephone Company of Rhode Island, on the evening of January 15, opened its case before the City Council and citizens of Providence in its application pending for a franchise. Such a great interest had been aroused among the citizens, who realized the importance of this opportunity to hear

(Continued on page 780)

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The Nebraska Independent Telephone Convention

OVER one hundred members of the Nebraska Independent Telephone Association were present at the opening of the annual convention at Lincoln, on January 22. This number was increased, by arrivals the same evening, to one hundred and fifty, with more to follow.

The feature of the first afternoon session was the address of the president, F. H. Woods, of Lincoln, on the year's work in Nebraska. It refers to a remarkable showing of growth and development during the year. Among the statements of general interest are the following:

"It is highly important that each telephone company should know not only its own business but that it should also keep fully posted as to what its neighboring connecting companies are doing. When many of us embarked in the telephone business, we sought to get good local service at reasonable rates. We thought that when our local plants were installed, the business would take care of itself. The demand for extension of service has exceeded all of our expectations and we find our small companies growing into large ones with no prospect of any abatement in the future of the marvelous growth that has been taking place. We have awakened to the realization of the fact that we are a part of a large system, complex in its nature, and that our patrons demand telephone connections with neighboring towns as well as good local service.

"The citizens of Nebraska have as yet but little conception of the magnitude of the Independent telephone movement. When they need the use of a long distance telephone line, through force of habit, they go to the Bell telephone. Their Bell directory for years has listed its subscribers throughout the State, while our Independent directories have been wholly local in their character. During the past year our long distance lines have been extended and our service greatly improved, until to-day in central and southeastern Nebraska we have more than forty-two thousand telephones connected together by good toll lines.

"A few months ago your executive committee instructed our State secretary to take up this work, and, if possible, arrange to publish a State directory. The result of his efforts is now in your hands, and I think you will agree with me in saying that the directory which we have published would do credit to any State association. It is said to be the largest Independent telephone directory ever published. We regret that it does not list all of our companies, and we are aware that there is room for some improvement along other lines, but I think we have made a good start.

R. E. Mattison.

"In order to get it out, we had to get the co-operation of the different companies to be listed. This never could be accomplished until the management of the State Association had obtained their confidence. Our present secretary has succeeded to a remarkable degree in getting the different companies interested in the Association work and in getting them to pull together. To-day we have an Association that is a powerful engine for the advancement of the Independent interests.

"Our secretary is also manager of the Telephone Traffic Association of Nebraska. He has succeeded in organizing and putting into operation a clearing house that is now clearing the joint toll business of practically all of the companies in the State operating toll lines. At the beginning only twenty-one companies reported to the association, and some of them joined only on probation. Now forty-three companies are clearing through the Association, others are joining as the toll lines are extended, and the business cleared is showing a steady and healthy growth."

Referring to the benefits of membership in the International Association, President Woods said:

"The telephone business cannot be confined by State lines, and if we are to attain the fullest share of success that the future has in store for us, we must become an integral part of the great Independent system extending throughout the settled portions of the North American continent. In the upbuilding of this great system, we need the guidance and assistance of a strong national organization. There is a great amount of work for such an organization to do. It will point the way of progress and will warn us of Bell pitfalls. Above all, it will inspire confidence in the success of our great undertaking. It will demonstrate to the public that we are larger and stronger than the monopoly that seeks to throttle and destroy us. It will give the public the truth about the Independent telephone movement and will put the 'publicity bureau of misinformation' of our competitor out of business. As soon as the people generally have confidence in the stability and ultimate success of our companies, we will have no lack of financial support. There is money all around us seeking investment, and as soon as the investors learn that they can safely invest in our enterprise, the work of financing our companies will be accomplished. This work of the National Association should receive our hearty support. They need money to carry out their plans, and we must assist in raising it.

"There are to-day some alleged trust and security companies in different parts of the United States that are advertising to finance Independent telephone companies. Some of them are frauds of the worst character and are seeking information of your business affairs for the purpose of selling it to your competitor. Before having any dealings with any concern of this kind, be careful to investigate its reliability and responsibility."

Following the president's address, which was received with enthusiasm, committees were appointed as follows:

Credentials.—J. D. Clark, of Papillion; R. E. Mattison, of Lincoln; G. E. Becker, of Pawnee.

Auditing Committee.—W. S. Clapp, of Kearney; T. H. Pollock, of Plattsmouth; W. K. Daubendick, of Dewitt.

The Western Telephone Company created a pleasant ripple by offering the free use of its toll lines to any delegates wishing to talk to their friends outside of the city. Manager Hurtz, of the Lincoln Telephone Company, invited the delegates to make themselves at home in the company's building. The evening was spent by delegates inspecting the exhibits of manufacturers.

The real telephone convention commenced Wednesday morning. The number of delegates in attendance had increased to 150 since the afternoon adjournment, and business was started promptly.

The first business to come before the morning session was the report of the secretary-treasurer, R. E. Mattison, of Lincoln. He discussed the condition of the Independent companies and the great improvement brought about during the year. The fight with the Bell company to prevent sub-licensing of local exchanges has kept the secretary jumping all the year, and he has gained much credit among the Independent men for the skill and diplomacy, added to genuine fighting qualities, which have made him successful in hundreds of contests. The following are

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abstracts from important portions of the text of his report:

"Early in the year the Bell company sent a great many representatives into our territory, expecting to sub-license a large percentage of the smaller companies. They started out with the regular sub-license contract, which provided, among other things, that the company accepting such a contract should sever all its connections with the Independent companies and use the Bell lines exclusively. This contract was always drawn for periods of from one to ten years.

"After trying this proposition for four months with no results, it was abandoned and a new proposition was presented, which they considered would get the business. This time they offered to connect their lines with Independent companies and take such business as the Independent companies chose to give them. The Independent companies were not required to discontinue any of their Independent toll line connections, in fact there were no restrictions of any kind in the agreement. These contracts were drawn to cover periods from 30 days to two years. This proposition is still being presented to the Independent companies by their sub-licensing agents.

"We have met these agents at a hundred different places and in almost every case have won our fight. Some of these encounters have been before joint meetings of town boards or commercial clubs or local telephone stockholders, and oftentimes both; and a dozen other combinations of local organizations interested in controversies of this kind.

"The Bell company has kept nine representatives in the field and has as a result of its year's work secured temporarily connections with seven small Independent companies, out of more than two hundred that they have solicited.

"The sub-licensing agents have misrepresented conditions in this State; they have misrepresented the purpose of this association; have misrepresented conditions in the adjoining States; and in fact have done everything they could to demoralize our business and build up theirs, and if this association had not been represented, in order to keep the facts in the case before the parties involved, I believe a great deal of harm would have been done.

"The association office has sent out circulars from time to time exposing the moves of the enemy and telling of the many defeats they have suffered at the hands of the Independents. The association office published a book of "General Information," showing the strength of the Independents as compared with the Bell, also giving many reasons why Independent companies should not connect with the Bell. The book also deals with the methods of handling the toll business through the Telephone Traffic Association. This book has been of considerable value in convincing the Independent companies that their combined strength is much greater than that of the enemy. And with the majority realizing their own strength we have been able to block the Bell at almost every turn.

"A year ago there were no Independent telephones in Nebraska that could talk to more than 35,000 Independent telephones. Those same telephones to-day can be used to talk to over 200,000 Independent instruments. This has been made possible through toll line extensions between Lincoln and Kansas City, and the building of a river crossing at South Omaha, which connects the Independent companies of Iowa and Nebraska.

"A great many toll line extensions have been made through the State. These extensions include an additional copper circuit between Lincoln and Seward; an additional copper circuit between Lincoln and Hastings; a direct copper circuit between Lincoln and Beatrice; a direct copper circuit to South Omaha from Falls City, via Auburn, Nebraska City and Plattsmouth; an additional copper circuit from South Omaha to Lincoln; a direct copper circuit has been completed from Kearney to Hastings via Kenesaw and the Kearney Telephone Company has constructed a copper circuit 60 miles north and west from Kearney, via Elm Creek, Overton and Sumner. This makes a total of 533 miles of No. 10 copper toll circuits that have been constructed this year.

"The association has grown during the past 12 months from 14,000 units to 24,000 units. The territory that our work is confined to has 48,000 Independent telephones as against 14,000 Bell; 210 Independent exchanges as against 39 Bell. The association has given a great deal of time to furthering the use of the National emblem, the Shield.

"We now have a State directory of Independent telephone users. We expect that this book will demonstrate to the general public the fact that there is a thoroughly efficient Independent toll line system in Nebraska, and also that the Independent telephone companies have won their fight against the Trust.

"The State has been divided into five districts. Most of the districts have held two meetings during the year and have found that a great deal of good is done by having meetings where purely local matters are discussed. A great many operating and traffic difficulties arise between neighboring companies that never come up between the companies located some distance apart.

"The district organization is particularly strong in keeping all these local matters straight. We are able to get a better representation of the territory at a district meeting than we can at a State meeting, and inasmuch as we must reach every one, we again see the advantage of this district organization. In each district there are three or four lieutenants who report to the State secretary the movements of Bell representatives and all other information that may be for the good of the cause.

"The district organization of the State is made up as follows: District No. 1, Dr. J. H. Lyman, Hastings, president; Fred W. Ashton, Grand Island, vice president; E. C. Crewson, secretary and treasurer. Counties—Hall, Hamilton, Merrick, Clay, Adams, Kearney, Buffalo, Howard, Sherman, Custer, Lincoln, Dawson and northern half of Phelps.

"District No. 2: T. H. Pollock, Plattsmouth, president; C. W. Nunemaker, Tobias, vice president; R. E. Mattison, secretary and treasurer. Counties—Washington, Douglas, Saunders, Sarpy, Cass, Otoe, Lancaster, Seward, Saline, York and Fillmore.

"District No. 3: I. E. Montgomery, Bloomington, president; Sam Patterson, Arapahoe, vice president; T. L. Porter, Alme, secretary and treasurer. Counties—Nuckolls, Webster, Franklin, Harlan, Furnas, Red Willow, Gosper, Frontier, Hayes, Chase, Perkins and Dundy.

"District No. 4: C. J. Garlow, Columbus, president; I. Lightner, Monroe, vice president; J. J. Roberts, Bellwood, secretary and treasurer. Counties—Polk, Dodge, Colfax, Nance, Platte, Boone, Butler, Madison, Stanton, Antelope, Cuming and Burt.

"District No. 5: C. W. Bartlett, Fairbury, president; A. R. Morris, Blue Springs, vice president; C. W. Pool, Tecumseh, secretary and treasurer. Counties—Nemaha, Richardson, Johnson, Pawnee, Gage, Jefferson and Thayer.

"The fifth district has things very much its own way, for in this district the Independent companies operate 12,000 telephones, while the Bell operate only 2,30.

"In traveling over the State during the past year your secretary has visited 160 towns and has observed that many things are needed that would improve the service. Among the things that would improve the conditions are: Standard toll line equipment; standard toll line construction; standard operating rules; a disposition on the part of each local company to solicit the territory they occupy for subscribers and for long distance business. I have found in a great many towns that the business men have not been informed of the extent or quality of the Independent toll line service that can be had over their Independent telephones, but have continued to use the toll lines of our competitor.

"I have also found that a great deal of business is lost by the Independent companies not providing a booth in the hotels for the use of the traveling public, and in a great many towns no booth is provided at the exchange or any public place to accommodate those who wish to talk privately. In the same towns, and many others, no signs are displayed to inform the people that there is an Independent company in the town, or that they have toll line connections.

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"It is also noticeable that Independent companies having a strong local organization are more successful and progressive than those organized on other plans. Our opponent recognizes the strength of strong locally organized companies, and you will find that such companies have been less hampered by attacks from the enemy."

President Woods appointed committees on constitution, legislation and resolutions, which reported later in the session. The financial report of Treasurer Mattison showed a balance in the treasury, and unpaid assessments of over $800, which he thought would be paid in shortly. The remainder of the Wednesday morning session was taken up with five-minute reports on roll call by individual companies. This part of the session was where the delegates got together and discussed their troubles and their ways of meeting them, and to those delegates who came to learn this part of the program was perhaps the most valuable of the whole session.

In the Wednesday afternoon session the roll call of companies was continued. During this session the convention was addressed by visiting telephone men from the adjoining State of Kansas, some of whose lines connect into the Nebraska system. President Nelson, of the Kansas State Association, spoke briefly on the progress of the Independents in his State, and invited the delegates to attend the Kansas State convention, to be held February 5. Other Kansas speakers were Messrs. White and Pearce, of Belleville, and Doherty, of Concordia. Mr. White's story of the attempts made by the Bell company to secure franchises and buy up companies in his territory threw light on the methods of the big competitor. He told of carloads of material shipped out to the small towns and left there, to bluff the local councils and commercial clubs; and also told how all those carloads were shipped back to the Bell headquarters within some months, a little the worse for the rain and weather, but undiminished by construction in the Independent territory.

Mr. Kinney, of Woodbine, Iowa, told of 2,500 Independent telephones in Harrison county, with eight or ten Bell instruments for company, and called attention to the Sioux City-Council Bluffs toll line, just being completed, which will greatly strengthen the Independents in his territory.

Two important papers read at the Wednesday afternoon session were the discussion by S. A. Hensley, superintendent of the Western Telephone Company (long distance), of Lincoln, on "Toll Line Construction," and the review of the year's progress by C. J. Garlow, of Columbus. Mr. Garlow, who has served on the State executive committee for the past year, and also acted as president of his district organization, of some 10,000 telephones, knows the inside of the telephone movement; and his pertinent comments on the improvements that should be taken up by the Nebraska Association received much attention. His statement that the magnitude of the connected system in the State demanded the permanent employment of a consulting engineer, to formulate standard plans of installation and toll line connection, was applauded by the delegates, as was his statement that the policy of the Independent companies must be to improve, to put themselves on an up-to-date footing, and to retain by superior service the advantage they had gained through the former slackness of the Bell rival.

On Wednesday evening the second annual banquet of the association was held at the Lindell Hotel. The song, "Good-bye, Blue Bell," to the popular tune Blue Bell, was repeated over and over with the chorus:

Good-bye, old Blue Bell,
Farewell to thee.
Good-bye to high rates and monopoly.
We've got our toll lines,
Switchboards as well;
We're going to down you sure, you old Blue Bell.

The program of toasts was as follows: W. S. Clapp, toastmaster. "Our State," H. M. Bushnell, editor Lincoln Trade Review. "How Prohibition Affects the Telephone Business," President Nelson, of the Kansas Association. "North of the Platte River," C. J. Garlow, Columbus, Neb. "The Man Who Has to be Shown," R. V. Montague, Missouri. "Our Nebraska Friends," G. A. Briggs, Elkhart, Ind. "The Men We Buy From," Frank E. McGillen, Chicago. "Advantages of Consolidation," F. M. Pearl, Hiawatha, Kan. Reading, "Soul of the Violin," E. E. Maggi, Lincoln.

One number not on the program which aroused much enthusiasm was the recitation, by request, of two poems by Oliver Wendell Holmes, "The Boys" and "The Horse Race." Col. George Lyon, of Nelson, himself one of "The Boys," made the hit of the evening with his contribution.

The Thursday session was devoted to completing the details of the large amount of business brought before the convention for action the first two days. An election of officers resulted in the unanimous re-election of officers who have served the association so well during the past year, as follows: F. H. Woods, Lincoln, president; W. S. Clapp, Kearney, vice president; R. E. Mattison, Lincoln, secretary and treasurer.

Executive Committee—F. H. Woods; C. J. Garlow, of Columbus; W. E. Bell, of York; T. H. Pollock, of Plattsmouth. There was one change made in the executive committee, T. H. Pollock, of Plattsmouth, being elected instead of T. E. Parmele,

(*Continued on page 79.*)

T. E. Parmele.

Frank H. Woods, President of the Nebraska Independent Telephone Association.

T. H. Pollock.

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THE EDITOR'S PAGE

WIRELESS TELEPHONY FOR BUSINESS.

CONTINUOUS and regular generation of electromagnetic waves susceptible to modification in correspondence with the characteristic variations of the sound waves produced by speech is the essential point wherein Professor Fessenden's method of wireless telephony promises to give results which will have a practical value. The invention of the high frequency alternating current dynamo gives to his system two exceedingly important advantages over other methods of producing the fundamental waves which carry the necessary energy between the transmitting and receiving stations. The first of these advantages is made apparent by the comparison of the results obtained since his invention of the high frequency dynamo with those given in his earlier experiments with resonant circuits having a spark gap for the generation of waves, as set forth in the article concluded upon another page of this issue. In some respects it strikingly suggests the historic step which brought to its practical state the "speaking telephone" as a distinct advance over the scientific toys which had been used for the transmission of musical tones over wires. The regularity of the electrical waves, and the fact that one merges into another without a distinct break, as seems to be inevitable in the other methods, gives to the transmission a perfection due to the absence of all disturbing noises.

The second advantage is that due to the fact that the amount of energy which can be generated, and controlled, by the methods described in the present article can undoubtedly be increased to a considerable degree beyond that developed in the experiments which have been made with the object of providing data for later practical uses. The limit cannot be foreseen with any degree of confidence at the present time, but it is believed that the increasing of the rapidity of rotation of the present machine to its limited speed, giving 100,000 cycles, will make it possible to increase the range of transmission considerably beyond that attained in the earlier experiments. The transmission during the recent tests was so clear as to make it evident that a distance sufficient for many thoroughly practical uses can even now be attained without further modifications even of detail. With the development of transmitters, relays and receivers to a state of efficiency greater than that at present attained will come further possibilities of extension of the distance over which speech may be transmitted by this method. The line of advance in the development of these controlling devices seems to have been determined with considerable precision, so that one may expect definite results.

As a scientific accomplishment this most recent invention has a certain quality of beauty which makes it the object of far more than ordinary interest. Those who have become familiar with the wave forms corresponding to spoken vowels by the examination of records made with the oscillograph know how complex a thing is the combination of waves corresponding to a word. The extraordinary sensitiveness of the instrument (*i. e.*, the telephone receiver) required for the proper reception of the electrical impulses due to speech as they are transmitted over a wire, and the great susceptibility of these waves to destruction by even slight disturbances, bear testimony to the extreme delicacy of these electrical word forms. That a man should be able to devise a means of sending out into space a quantity of radiant energy bearing characteristics at once so complex and so delicate, and gathering at a determined point this remarkable thing with its integrity unimpaired is wonderful. Then add to this that his invention makes it possible to re-transform this energy, not into the heat from which it originated, but into the sound which gave it its peculiar form, and one may begin to realize the tremendous range of possibilities open to an imaginative mind trained to scientific work.

The influence of a practical system of wireless telephony upon the method of conducting various classes of affairs appears to be open to wide development. Tending to hasten its introduction on a commercial scale in many localities, as soon as a system is ready for use, will be the fact that it will not interfere with, but on the contrary can be made to most effectively supplement the present wire lines. Especially in the simultaneous transmission of a single message to many destinations, and to replace submarine cables with their high cost and narrow limitations upon distance for effective transmission, does a thoroughly practical system of wireless telephony promise to be a valuable aid to progress.

IOWA'S EDUCATIONAL PLAN.

PUBLICITY for the success attained by Independent telephone companies throughout the country is to be given in a most efficient manner by the members of the Iowa State Association. As explained last week, there is now being prepared a lecture, to be given for the first time at the convention to be held in March at Sioux City.

The basis of this lecture is to be furnished by photographs of typical buildings owned by successful operating and manufacturing companies in all sections of the country. This plan has the double advantage of making an appeal to the eye of the observer in a fashion that he cannot fail to understand, and of furnishing visible testimony of a kind which cannot be contested. The accuracy of the product of a camera, unlike that of a column of figures, is beyond dispute.

The proposed plan gives so much promise of valuable results, and is being so vigorously pushed by those who are responsible for its success, that it will be eagerly watched from all quarters. It is fortunate that telephone companies outside of Iowa may not only observe the value of this plan, but share in its benefits by co-operating with its originators. All companies which own buildings of attractive appearance should lose no time in sending photographs to the chairman of the program committee of the Iowa State Association, whose address is given on page 78 of this issue.

THE NEBRASKA IDEA.

SUBSTANTIAL aid to its members is the key to the efforts of the Nebraska Independent Telephone Association. The work of the organization during the past year, the success of which is to a large degree accredited to the energy and ability of Secretary Mattison, has resulted in the placing in the hands of members of much information which aids them effectively in the conduct of their business. The compilation of statistics and other information, aid in fighting the efforts of the opposing company to extend the sub-license plan, the issuing of a State directory, and the vigorous pushing of Independent advertising constitute a most valuable record of accomplishment. Not only has real development of a substantial sort been accomplished as a result of the individual efforts of members of the organization, but their co-operation with the central organization has brought many benefits to all companies which could have been secured in no other way. The plans for the coming year promise to retain for the Nebraska association the enviable place it has, by its good work, attained among the leading Independent organizations of the country.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

BUILDING TO REMOTE PART OF TOWN.

Will you kindly advise through the columns of your journal on the following:

A duly incorporated company is operating in a town, the boundary of which is about six miles from the central office, the company having lines run throughout the town, and it is understood that its business is confined to said town, excepting its long distance connections; a party living off the main line, but on a regular highway in the town, desires a telephone, but the company holds that the prospects for other subscribers are too remote to warrant building to him at said company's expense; the subscriber agrees to all conditions of said company as to time of lease, etc., and cites other parts of the town where it has run its lines as far for a subscriber. Can this party compel said company to furnish him with a telephone and service, and if so, is there any penalty for refusal on the part of the company to serve him or delay in same? The distance is about one-half mile from the main line; the party is fully responsible for rental, etc. XX.

A TELEPHONE company is a common carrier of intelligence, and as such is bound to furnish its instruments to whomever applies for their use. Under this principle, your company, if it holds itself out to provide telephone service in the entire town, can be compelled by the prospective subscriber to furnish him with a telephone and service. It is held, however, that a telephone company is under no duty to furnish telephones outside the city limits where it holds itself out to do a telephone business only within the municipal boundaries, so if it advertised itself as doing a telephone business in part only of the town it could not be compelled to furnish instruments in any other parts. It may also discriminate between subscribers of different classes, but the classes must be arranged on general principles and must be well established. The company cannot arrange classes for the occasion.

There is no stated penalty for refusal on the part of the company to serve the subscriber or for delay on its part in serving him, but the subscriber would be entitled to collect damages for the company's neglect.

Crouch vs. Arnett, 79 Pacific, 1086.

STATUTE PROHIBITING TRANSFER OF FRANCHISE BY CORPORATIONS DOES NOT APPLY TO INDIVIDUALS.

THE Long Acre Electric Light and Power Company of New York applied to the Supreme Court for a writ of mandamus to compel the Consolidated Telegraph and Electric Subway Company to give the petitioner a place in its subway ducts for the placing of three electric conductors. The subway company had refused to let the other company have the place desired. The petitioning company had complied in all respects with the rules and regulations laid down in the Subway Act of 1887 for such applications, and fornished to the company and to the court documentary evidence showing its title to a franchise. The principal objection made by the defendent was that the petitioning company must first apply to the comissioners of water, gas and electricity before the application for space in the subway could be made, but the court held that such prior application was unnecessary.

Defendent also alleged that a franchise was not property and assignable as such. But the court held that the general policy of the State of New York was to render an interest by way of franchise independent of the life of the original corporation, and transferable as property. Another objection was that the consent of the gas commissioner to the assignment of the franchise from an individual to the Long Acre Company was not obtained. To support this objection, a statute which forbids a corporation transferring or leasing its franchise or other property to any other person or corporation was cited. This statute contained no prohibition of such transfer by an individual. The court therefor held that the transfer of the franchise was proper and granted the mandamus applied for. In re Long Acre Electric Light and Power Co., 101 N. Y. S. 360.

SAN FRANCISCO FRANCHISE VALID.

THE attempt of Hugo K. Asher to have the franchise granted the Home Telephone Company of San Francisco last April declared void has met with defeat in a decision favoring the company, rendered January 7 by Judge Kerrigan.

The judge's authority to render the decision was called in question by Asher's counsel, who contended that Kerrigan's term as superior judge had expired at midnight on the Sunday previous. Judge Kerrigan's decision was rendered on the ground that the correct remedy for the plaintiff was not through a suit for an injunction, which was the purpose of the action at bar.

The suit to test the validity of the franchise was based on the conditions existing immediately subsequent to April 18, 1906. The receipt of bids for the franchise was set by the board of supervisors for April 23 and the bid of the Home Telephone Company was received at that time. On June 9, Dr. Butterfield filed a bid that was higher than that on which the franchise was awarded, but Asher asserted that this did not affect Butterfield's rights, as the days intervening between April 18 and June 9 were declared legal holidays by Governor Pardee. This contention was not regarded as decisive by the court.

ABUTTING OWNER MAY NOT ENJOIN BUILDING OF LINE IN ALABAMA.

THE Long Distance Telephone and Telegraph Company of Alabama, while engaged in the construction of its line, was restrained by injunction sued out in the Limestone County Court of Alabama from proceeding with its work. The complainant, an abutting owner, demanded compensation for damages to his lands before he would permit the work of continue. The company answered that it was constructing its line along the margin of a public highway which runs through complainant's land, and showed that all the damage that would be done was the cutting of six trees and a little underbrush of no particular value. The court held that a telephone line constructed along the margin of a highway is not an additional burden entitling the abutting owner to compensation. The court based this decision upon section 2490 of the Alabama Code of 1898, which gives the right to telephone and telegraph companies to construct their lines "along the margin of the public highway." It was, therefore, right for the company to cut these trees, since the municipal corporation which controlled the highway would have had the right to cut trees and might lawfully delegate that right.

Hobbs vs. Long Distance Telephone and Telegraph Co., 41 S., 1003.

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IN THE OPERATING FIELD

TOLL LINE IMPROVEMENTS IN NEBRASKA UNITE MANY IMPORTANT CITIES.

A NEW copper toll line, which taps many important Nebraska cities and towns, is expected to be completed and in service within a few days. This line has been built by the co-operative efforts of a number of companies, each of which has built a section. The completion of this work united a large number of cities in this region, which, although operating well developed local systems, have been somewhat handicapped in the matter of connection over toll lines. The present line gives Nebraska cities a new wire, over which connections may be had with Atchison, Lawrence and Kansas City on the southwest, and Council Bluffs, Des Moines, Sioux City and other towns in the east. The line, among other places, taps Hastings, Lowell, Lincoln, Kearney and Kenesaw.

INDEPENDENT LINES ADVANCING IN TENNESSEE.

ALTHOUGH unable at present to operate exchanges in Nashville, Tenn., owing to delays incident to litigation brought on by the Bell company for the purpose of hindering the Independents, much work is being done along the main line of the Home Telephone Company, which extends through the State. A line from Louisville has been extended into Nashville, and the Home Telegraph Company is now operating a long distance toll office there. Injunctions and other court troubles brought about by the Cumberland Telephone and Telegraph Company (Bell) have prevented extensive work in Nashville so far, but the company is said to have erected about 500 poles along a number of principal streets. From the south line of the city the poles reach several miles. When the gap between Nashville and Columbia, forty miles, is filled, the Independent company will have a through line from Louisville to Birmingham, Ala., where the Independent company has a flourishing business, the largest exchange in the city.

At Columbia, Tenn., The People's Telephone Company has a flourishing business and a toll line to Berham, which will connect with the Home company's trunk line. F. F. Ruggles, superintendent of construction for the Home company, has carried his line south from Columbia, Tenn., to the Tennessee River at Decatur, Ala., where he has just laid a submarine cable under the river. Within a few weeks he will have the line completed from Columbia to Birmingham. In Decatur the Independent people now have a modern exchange with a good list and another at Cullman, Ala. When the trunk line is completed, however, several other local exchanges will be put in. The trunk line is being built of chestnut poles, carrying three lines of Nos. 10, 8 and 6 copper wire respectively.

BATTLESHIPS IN CHARLESTOWN NAVY YARD INSTALL TELEPHONE PAY STATIONS.

TELEPHONE systems on shipboard, both upon passenger liners and battleships, are now very commonly installed. It has even been no unusual thing for a long time past to run a temporary connection to a vessel during its stay in port. An advance along this line seems to be recorded in a recent report from the United States navy yard at Charlestown, Mass., where it is said that at present there are five large battleships undergoing repairs. Each of these has had installed near the officers' quarters a telephone booth, from which connections may be had directly with the central exchange in the city of Charlestown, and all points reached by toll lines.

NO PROSPECT OF BELL COMPANY ACQUIRING INDEPENDENT EXCHANGE AT ELKHART, IND.

ALTHOUGH repeatedly during the past year reports have been circulated by persons connected with the Bell interests, who wished to injure the business of the Home Telephone Company of Elkhart, Ind., that the latter company was to be absorbed by the trust, at a recent meeting of the officers of the company it was emphatically stated that no such arrangement will be made.

Owing to the favorable reports which were made of the com-

Delegates and Guests at the Recent Convention of the Vermont and New Hampshire Independent ***Telephone Association.***

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IN THE OPERATING FIELD

pany's progress, it was decided to make important improvements in the system during the coming year. New exchange equipment is to be installed at Goshen and the plant will be brought up to date in the best possible manner.

At the Elkhart exchange work will soon be begun on the erection of 5,000 feet of cable, which will improve distribution in the business district.

The company is now operating nineteen exchanges, of which the largest is at Elkhart, with 1,780 telephones connected, and the next in size is at Goshen, with 1,010 telephones. There are 5,000 Independent telephones in Elkhart county.

Forty-eight girls are now employed in operating and accounting departments, and fifteen men work for the company. The stock is divided among no less than one hundred and nineteen holders, the most of whom are residents of the territory in which it operates. At a recent meeting the following officers were elected: Dr. I. W. Short, president; J. A. Arthur, vice-president; W. L. Shoots, secretary and general manager, and with these, P. R. Judkins, W. C. Peters, of Goshen; J. B. Pollard, E. D. Ziesel and Wilson Roose, of Elkhart, constitute the board of directors.

IOWA CONVENTION TO BE HELD AT SIOUX CITY, MARCH 19, 20, 21, 1907.

THE convention of the Iowa Independent Telephone Association is to be held at Sioux City, Ia., on March 19, 20 and 21. At this convention will be presented for the first time an illustrated lecture which is being prepared by the members of the association. Telephone companies have been invited to cooperate with the association in the preparation of this lecture by sending photographs of buildings, etc., to C. H. Smith, chairman of the Program Committee, care New State Telephone Company, Sioux City, Ia. This address and the place of the convention are correct, superseding the erroneous statement which appeared in our issue of last week.

Important matters of operation and development are to be discussed, and reduced railway rates have been secured, so that a large attendance is assured.

WINNING PROVIDENCE FOR THE INDEPENDENTS.

(*Continued from page 71.*)

of the advantages of an Independent telephone system, that the council chamber and galleries were filled with citizens to overflowing, the large entrance doors having to be opened so that the hundreds of anxious citizens who could not gain admittance to hear the proceedings stood in the entrance corridors and halls. A great many ladies were present, which lent color to the audience. Prominent business men were there to judge for themselves the merits of telephone competition. In th audience could be seen a great many men of national importance and reputation.

The cases were presented by Judge Lee, of Providence, the company's attorney, assisted by Mr. Charles E. Sumner, of Toledo; Judge Albert R. Smith, of Buffalo; Hon. H. Hendrickson, of Albany; R. Maxwell Eaton, secretary of the New York State Independent Telephone Association, and Ray H. Manson, expert engineer from the Dean Electric Company, of Elyria, O.

Representatives of the Bell telephone company were there in large numbers. The case was opened by Judge Lee, of Providence, who recited the history of the telephone movement and made known the personnel of the directorate of the Home company, which had been kept a secret up to that time. He announced that the directors and officers of the company are: Dr. Clarence T. Gardner, of Providence; Howard Hendrickson, of Albany, N. Y.; Theodore M. Brush, of Elyria, O.; William Penn Mather, of Providence; Arthur W. Dennis, of Providence; Bertrand J. Horton, of Providence, and Thomas Z. Lee, of Providence. The officers are: President, Thomas Z Lee, of Providence; vice president, Dr. Clarence T. Gardner, of Providence; secretary and treasurer, Theodore M. Brush, of Elyria, O. When these names became known, applause greeted the public knowledge of their identity, showing that the citizens of Providence appreciated the men of worth who are back of the enterprise.

A demonstration of telephone equipment and apparatus was made in the Council Chamber by Mr. Manson. As throughout New England Independent telephone matters are comparatively undeveloped, it was thought advisable to show the superior character of the product of a modern Independent factory.

The principal speaker of the first evening was R. M. Eaton of Niagara Falls. His address, in which he keenly criticized the weak points of the service and rates of his opponents, and set forth the advantages to be derived from the admission of his company, was comprehensive and eloquent. The following is the list of pertinent points gleaned from Mr. Eaton's presentation of the case:

"The housewife having the $25 service of one and one-half calls per day, may call the baker in the morning for her bread, but will have to go without meat for dinner, as she has only a half call left.

"Figure the rates of the Providence Telephone Company per line, rather than per subscriber, and see what it means.

"What is the use of having a telephone for ornament? The quantity of the service you can secure is the value of the instrument.

"A number of people in Providence who have expressed themselves as averse to two telephones, already have two or more telephones in their establishments, and have forgotten all about that. The granting of a franchise does not compel a subscriber to have two telephones.

In no city of the United States where telephone competition exists, has the Bell telephone service depreciated in numbers or quality, consequently the subscriber who takes advantage only of the present service is tremendously benefited in three ways—by increased service, reduction in rates and better treatment.

"Business men, don't take the dual service unless you want it. You will be getting ahead of the game by letting it come in, anyway, if you even only stick to the system you have.

"Over 80 per cent. of the residences in Providence are yet without telephone service; how do you account for it, and what are you going to do about it?

"Some business men stated that they did not want two telephones; this would seem to coincide with the argument that they don't want two customers to come in at the same time—they might have to hire additional clerks.

"One large establishment stated that it did not want two telephones, as it might have to hire an additional girl to take orders over the new line: narrow minded, isn't it?

"Some people have said, 'Give us a franchise, but make us pay to the city abnormal sums for it.' Be fair. Give us a franchise under equal conditions and equal restrictions with the opposition. If you will have a race and benefit by it, place no handicap on either of the contestants; it is un-American.

"Don't imagine that the city of Providence will be torn up for underground work to give you a parallel of previous experience. Construction work is not done now with a stick of dynamite in one hand and a red flag in the other. No street in Providence with heavy traffic will be opened during the daytime; work will be done at night and closed in by morning. You will not know your streets have been opened. Not one-third of the streets of the city are required to be used for telephone distribution. Pole lines will not be constructed as now exist on the sides of your best streets, or few other streets, for that matter. Alleys and private rights of way will be used.

"It has been stated that there is no room in the streets for additional ducts. The streets may not be very wide, but they are 4,000 miles deep. Nothing else could be put in Broadway, New York, but when they got around to it, they constructed a subway there four tracks wide, through which passenger cars are running. That was the limit, but when they wanted to, the Pennsylvania Railroad went underneath that with another big tunnel.

"You need competition; we are willing and ready to give it to you.

"There are ills in the telephone business to be remedied that will never be remedied in any other way but by competition.

"Providence, a manufacturing city, cannot afford to exclude herself from the great markets of the West, and the majority of telephone users of this country. Toll line service will be connected with Providence as far west as Kansas City, and south to the Gulf.

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Providence should have 25,000 telephone subscribers, instead of between 11,000 and 12,000 as it now has, liberally estimated.

"About two telephone books—it is better to look in two books and find who you want to talk to, than it is to look in one book, and then send a messenger boy.

The advantages of competition, as shown by the improvement in conditions in very many parts of the country, were set forth by various prominent telephone men. Among them were Charles E. Summer, who told of conditions in Toledo, O., Portland, Ore., Spokane, Wash., and other places. Hon. Howard Hendrickson, of Albany, and Judge Albert R. Smith, of Buffalo, told of the advantages of Independent service in their localities. Other favorable statements were made by Vinton A. Sears, of Boston; Judge Edward C. Dubois, of the Supreme Court of Rhode Island, and other prominent men.

Three hearings were given to the Providence Telephone Company on the afternoons of January 28, 29 and 30. Although these hearings were held too late for us to report in detail their effect, it was evident that the standing of the men behind the Home Company, the strength of the facts they presented, and the evident sincerity of their intentions to give to Providence an improved telephone service at lower rates, convinced the people of the city that it is to their interest to have a competing telephone system. It is expected on all sides that the council will not delay in carrying out the wishes which have been so generally expressed in public, that a franchise should be at once granted to the Home company.

THE NEBRASKA INDEPENDENT TELEPHONE CONVENTION.

(*Continued from page 74.*)

of the same city. Mr. Pollock and Mr. Parmele are business partners and the change was made for their convenience.

During this session L. E. Hurtz, manager of the Lincoln Telephone Company, read a technical paper on the charging of storage batteries from an alternating current source which attracted wide attention and brought out much favorable comment on the thorough manner in which the subject was covered.

An able paper was read by G. E. Becker, of Pawnee City, on "The Position of Telephone Companies Before the Law." His article was a comprehensive discussion, taking up the various troubles that meet the right-of-way man, and the other difficulties apt to arise between the telephone company and the public.

The important work of adopting a revised constitution, drawn so as to cover the enlarged size and scope of the association, occupied most of this day's session. The Telephone Traffic Association, which handles the clearings of toll service for the Nebraska companies, held its annual meeting and re-elected the former officers. The report by Secretary Mattison announced that negotiations were being completed to extend the Traffic Company's work so as to handle clearings on interstate business between Nebraska and adjoining States.

General commendation was expressed, in the talk of the delegates and in the speeches made on the convention floor, at the work of the secretary, R. E. Mattison. Mr. Mattison has manifested the happy faculty of being a good general, a good lawyer, a good debater, a good fighter if necessary, and the remarkable progress of the association during the last year is ascribed in a considerable measure to his efforts.

The net results of the convention are best summarized in the plans determined on by the newly elected executive committee, in a meeting held immediately after the convention. The committee issued the following statement:

"The Telephone Association, through its executive committee, will proceed as soon as possible to put into effect the important reforms recommended by the convention. Our association has reached a magnitude that makes it necessary for its component companies to adopt a permanent policy of giving a service so excellent that it will continue to hold the good-will of the telephone-using public, which it now possesses.

"The improvements we will inaugurate are as follows:

"The secretary of the association will issue a regular monthly bulletin, containing information on the telephone movement in this State. The first bulletin will appear March 1.

"The association will issue specification for standard toll line construction and standard toll line equipment. These specifications will be prepared from the best telephone authorities, adapted to local Nebraska conditions, and will be fully illustrated with cuts and diagrams showing the best methods of meeting the various problems of construction and connection. By the adoption of this standard the few ragged ends of our long distance service, which now compares with the best in the country, except in a few cases, will be brought together, and we will compete in toll service as effectively as we already have in local service.

"The Telephone Traffic Association will at once complete the work of preparing a routing book and rate sheet, and will employ extra help to expedite the work.

"The affairs of the association are in excellent condition. The method of assessing members of the association on a basis of ten cents per unit has proved very satisfactory, and the association has ordered it continued another year."

Many well-known manufacturers and supply houses were represented at the convention, and the following is a list of such companies which took out honorary membership in the association, through their representatives at the convention, whose names are given:

Western Electrical Company, Omaha, Fred G. Balz; The North Electric Company, Cleveland, O., A. A. Miller, E. M. Scearce, Albert Korst; Backus-Judd Lumber & Cooperage Company, Minneapolis, Geo. J. Backus; Electric Appliance Company, Chicago, E. V. Brown; Illinois Electric Company, Chicago, C. MacIntyre; Joseph R. Lehmer, Omaha, W. E. Crist, W. E. McFadden; Frank B. Cook Company, Chicago; F. A. Rader; Western Electrical Company, Omaha, Frank D. Lowry; American Steel & Wire Company, Chicago, G. E. Quigley; Columbia Electrical Company, St. Joseph Mo., T. O. Strong; Sterling Electric Company, Lafayette, Ind., C. R. Brown; Valentine-Clark Company, Chicago, T. L. McGillan; Dean Electric Company, Elyria, O., Fred Coulson, W. S. Williams, T. H. Halstead; Swedish American Telephone Company, Chicago, Ill., F. M. Ferguson; Stromburg-Carlson Telephone Manufacturing Company, D. C. Gould, Omaha; Electric Appliance Company, Chicago, R. S. Mitten; Colman J. Mullin, Brooklyn, N. Y.; L. K. Deal, representing L. K. Deal Lumber Company, Des Moines, Ia.; Nebraska Electric Company, Omaha, represented by A. G. Munro, secretary, and J. F. Munro; A. J. Carter, Sioux City, Iowa, representing Monarch Telephone Manufacturing Company, Chicago; Vote-Berger Company, represented by P. W. Goodman, Northwestern representative, and R. C. Fields, Nebraska representative; E. L. Larabee, Nebraska representative Eureka Electric Company, Genoa, Ill., W. H. Messenger, secretary Eureka Electric Company; George W. Brown, Elkhart, Indiana; Geo. A. Briggs, Elkhart, Ind.; W. J. Crawford, Chicago.

EXPERIMENTS AND RESULTS IN WIRELESS TELEPHONY.

(*Continued from page 70.*)

by atmospheric disturbances, or by disturbances from nearby stations, and that it is adapted to the reception of a message on the same aerial which is being used to transmit a message to another station.

The apparatus as set up for experiments in talking from Brant Rock to Plymouth at the time of the recent test referred to at the opening of this article was set up in conformity with the circuits shown in Figs. 12 and 15. The armature in the transmitting circuit Fig. 12 is in series with a resistance and the

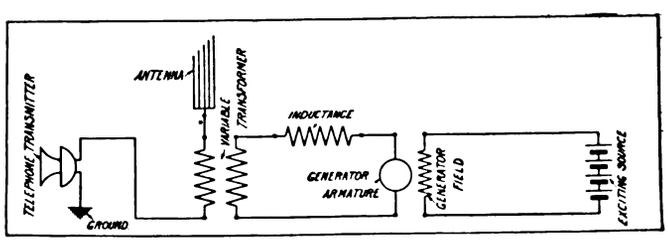

Fig. 12. Arrangement of transmitting circuit used in latest tests of wireless telephone transmission.

primary of a variable transformer. This latter piece of apparatus consists of a pair of non-inductive cores, about which are wound a number of turns of wire, the number of turns on each core being varied to suit the requirements of transformation by the simple device of rotating the core with a crank. Examples of this type of transformer are visible at the front of the right hand table in Figs 7, 10, and in Fig. 13. A similar trans-

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FOR SALE—At half price, one hundred forty American Electric four-party, selective, ringing telephones. First class condition—most of them as good as new. Address Zenith Telephone Co., Duluth, Minn. 762

FOR SALE—Fisher Cable Testing Set, high sensibility galvanometer, 100000 ohm coil, Ayston shunt, ½ mf. sub-divided condenser, Wheatstone bridge. Original cost $485.00. Will sell at a bargain. J. W. Wright, 1304 Arch street, Philadelphia. 766

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WANTED by Bell Telephone Company, operating 100,000 stations, competent District Managers and experienced maintenance men. Unusual prospects for new men owing to changes in organization. Address Box 758, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 758

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WANTED—A position in the West or Middle West with an Independent telephone company. Have had 20 years' experience. Best of references. Address Box 764, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 764

WANTED—Non-union cable splicer. Good position for a capable man. Address, with full particulars, Box 767, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 767

WANTED—A young man who has worked from the ground up, and at present is Manager of the largest country exchange of an Independent operating company in Kentucky, desires position as manager or superintendent of exchange with Independent company in live community. References furnished. Address Box 768, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 768

WANTED—Position as manager with telephone company with 300 to 500 telephones. Seven years' experience, four years with present company. Best of references. Address Box 100, Baxter, Iowa. 769

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Form G-90-E.	For Small Exchanges, Rentals only.
Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
Form G-90-H.	One subscriber to a sheet; carries account 12 years.
Form G-90-I.	For Small Exchanges; Round Books; carry 12 subscribers on a page for 1 year.

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former is used in the receiving circuit, Fig. 15. The receiver and battery are connected across the terminals of the barretter in the manner indicated, a simple potentiometer arrangement being used to regulate the normal voltage at the receiver terminals. Inductances, not shown in these diagrams, were inserted between the aerial and the transformer winding for the purpose of tuning.

With this arrangement of apparatus speech was clearly transmitted from Brant Rock to Plymouth by some of the men present at the tests made on December 21. These tests also included experiments in transmission from a phonograph and nearly all speech, as well as music was distinctly intelligible. All tests made were apparently satisfactory. Articulation was distinct, the quality of reproduced tones good, and the efficiency of transmission was high. An expert stated that he believed the efficiency to be on that day rather better than transmission through twenty-five miles of standard cable, this judgment being, of course, based on his estimation unassisted by any of the devices for comparison which are available in laboratories for transmission testing. A modification of the circuit which is shown in Fig 12 is effected by the introduction of a telephone relay as indicated in Figure 14. For this purpose Professor Fessenden has designed a highly ingenious type of relay, using

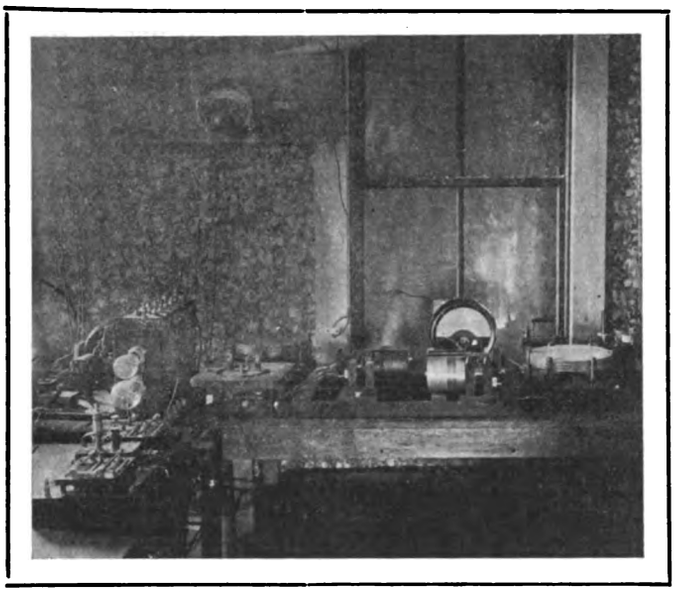

Fig. 13. View of transformers, condensers, etc., at a receiving station.

differential windings on the cores of magnets, between the poles of which is mounted an armature attached to the electrode of a microphonic transmitter chamber. Variation in the current traversing the windings causes a shifting of the magnetic field to one side or the other, producing a corresponding series of changes in the position of the plate controlling the movable transmitter electrode. This relay has shown itself to be very sensitive in practice, but improvements made within the past few weeks are expected to materially improve its efficiency. As a call a double differential relay of this type has been used to operate either a loud-speaking transmitter, a bell or a Morse writer.

In the system shown it is necessary, as in the early Bell telephone system, to throw a switch to change from talking to listening. At the tests a method of overcoming this defect was explained. Although patent considerations prevent the publication of the method of accomplishing this at the present time, it has been in successful operation. In general, Professor Fessenden has found that where no spark is used for transmitting and a carbon transmitter is used for modifying the strength of waves the speech is as distinct as over a short open wire line, rather more distinct than over cables, owing to the absence of any capacity effect, and there is a total absence of extraneous noise. With the present methods of transmission, there appears to be no distortion of sounds with increase of distance, as is found in all wire lines. Although this might have been anticipated, it has been experimentally demonstrated by comparison of the relative intensities of notes of different frequencies at different distances. These characteristics have led to the prediction that wireless telephony may operate over longer

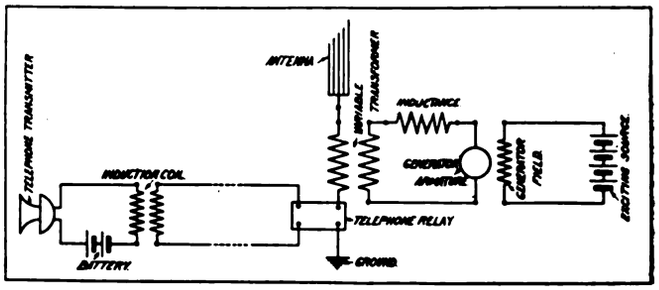

Fig. 14. Arrangement of transmitting circuit with telephone relay between transmitter and aerial.

distances than is possible with wire lines. The difficult problem in increasing the range of transmission is at present the modulation of the large amount of energy given out by the antenna. Where an ordinary granular carbon transmitter is used about one-half ampere of current is all that can successfully be modulated, and even with special transmitter buttons 2½ amperes seems to be about the limit. With multiple buttons the limit is reached at about 10 amperes. For currents larger than ten amperes a number of telephone relays may be placed in series and operated by a single transmitter. The practical limits for this method have not as yet been determined. Much depends upon the possible improvements in the efficiency of the relays.

Possible uses of wireless telephony cover a variety of important fields. At sea the wireless telephone may be used as a safeguard in foggy weather. On land it is doubtful if wireless transmission will ever supplant the local exchanges with wires. So far as the subscriber is concerned, the simplicity of present systems is an advantage which is not likely to be overcome. For trunking, however, it apparently has a field, owing to its comparatively low first cost, faculty of working multiplex for the transmission of several conversations simultaneously by methods which are now being developed, and to its lack of susceptibility to the foreign influences which produce disagreeable noises in open wire lines. Its ultimate adaptability to long distance transmission and its comparative low cost is a factor which should not be overlooked. For supplanting submarine cables the system has an obvious advantage in transmission, owing to the absence of capacity effects. A practical application along this line which has been suggested is the use of the wireless system for transmitting speech across the English Channel. It is admirably adapted to the transmission of news, music, etc., as, owing to the fact that no wires are needed, simultaneous transmission to many subscribers can be effected as easily as to a few.

Methods of automatic relaying from ordinary telephone lines to wireless transmitting lines and from a wireless receiving station to a wire line are obviously simple and have already been tested with success. On sea and on land wireless telephony

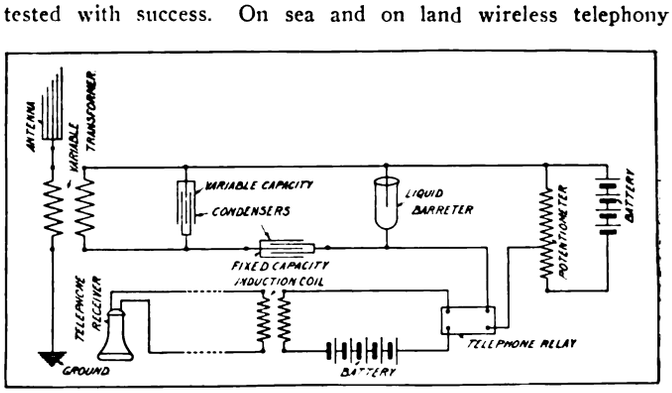

Fig. 15. Arrangement of receiving circuit using telephone relay. The circuit used in the tests on Dec. 21st was similar except that the telephone receiver was connected directly in circuit without a relay.

has the immense advantage over telegraphy that no expert operator is required either for transmission or for sending.

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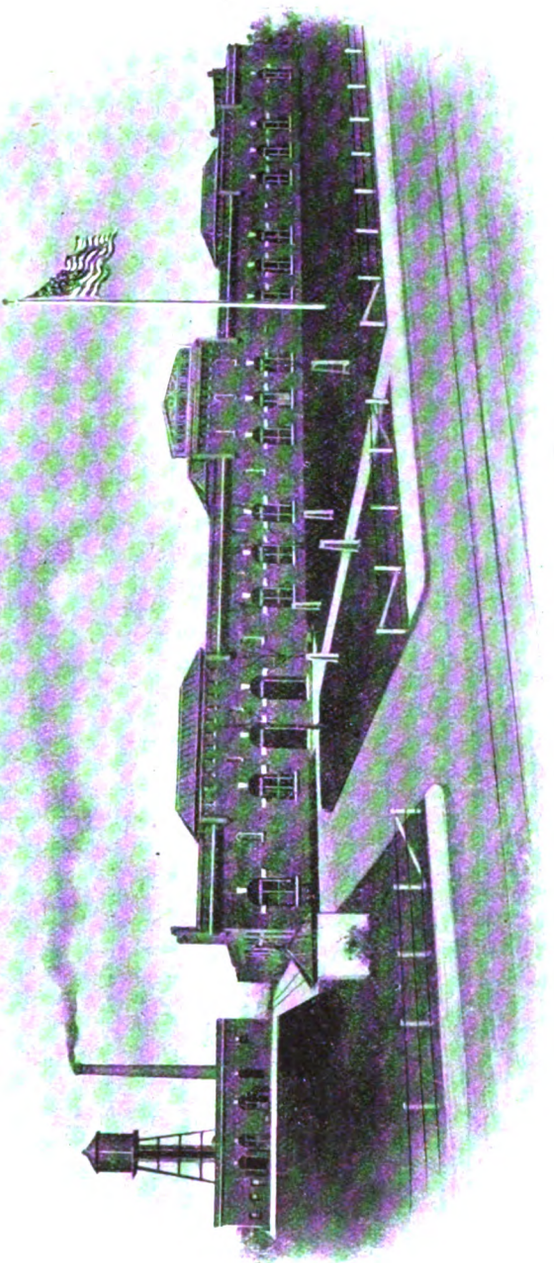

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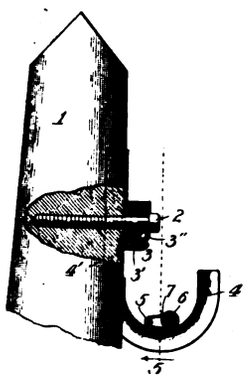
TELEPHONE PATENTS

APPARATUS FOR ERECTING AERIAL CABLES.

Ralph S. Peirce, Chicago, Ill., patents (No. 840,009; dated Jan. 1, 1907; filed Feb. 27, 1905; serial No. 247,491) an apparatus for erecting aerial cables.

The object of this invention is to provide a type of hanger for temporary use in the stringing of cables which shall make it unnecessary to employ a man at each pole to pass hooks by the messenger support.

The device consists of a curved plate of sheet steel as shown



at 4, forming a hook. The portion of this hook which is secured to the pole is curved to conform with the circumference of the pole to give it a considerable amount of bearing surface, while the hook portion is curved to allow the cable and messenger wire to lie freely within it and to be supported by it. Lateral edges of this portion of the device are curved downwardly so that, when the cable is being drawn along, there will be no chance for it to catch. After the cable has been pulled into place, it may be supported temporarily at each pole by a suitable lashing of rope and the shoe removed, after which the messenger-wire may be secured in its proper place on the permanent support. In a modified form, a slot in the hook 4 is provided by means of which it may be withdrawn from the lag-bolt 2 by lifting slightly and moving it sidewise. After this the lag-bolt 2 may be tightened in the usual manner on the messenger hanger and the cable left permanently supported.

TELEPHONE SYSTEM.

Alfred H. Dyson, Chicago, Ill., patents (No. 830,981; dated September 11, 1906; filed April 17, 1905; serial No. 256,063) and assigns to Milo G. Kellogg, Chicago, Ill., a telephone system.

This invention covers apparatus and circuits for giving a substation means for simultaneously connecting to all the lines of a plurality of other sub-stations, and ringing bells at and communicating with persons at these stations. It is accomplished by the provision of a special service circuit at the exchange and a relay for each line, associated with this special service circuit. Special apparatus at the exchange is adapted to operate the relays and to switch all the lines into a common conversational circuit. The details are worked out with reference to an automatic system.

AUTOMATIC DISCONNECTING PLUG.

Isidor Kitsee, Philadelphia, Pa., patents (No. 838,787; dated December 18, 1906; filed June 8, 1901; serial No. 63,749) a self-withdrawing switchboard plug.

This patent covers a device consisting of a rather complicated aggregation of pieces of insulation, iron, coils, special circuits, etc., etc., the object being to provide a switchboard plug which will automatically fall out of a specially constructed jack when a subscriber breaks the continuity of a line circuit at his telephone.

COMBINED TELEPHONE AND DISTRICT MESSENGER SYSTEM.

James G. Nolen, Chicago, Ill., patents (No. 838,136, dated Dec. 11, 1906; filed Nov. 26, 1902; serial No. 132,856) a combined telephone and district messenger system.

An arrangement of circuits and apparatus designed to make it possible to send a messenger call over a telephone line is described.

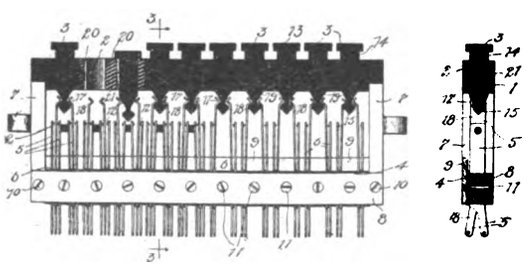
A call-box, containing an interrupter, is bridged across the telephone line at the sub-station. The operation of the interrupter causes the line signal to be intermittently disclosed and withdrawn at the central office, indicating the special nature of the call. To show that the operator has recognized the call and forwarded it to its proper destination she is provided with a means for operating the indicator in the face of the messenger call-box through an electromagnetic mechanism having a grounded neutral point, located within the call-box.

SWITCHING DEVICE.

William Kaisling, Chicago, Ill., patents (No. 840,699; dated Jan. 8, 1907; filed Nov. 23, 1903; serial No. 182,392) and assigns to The Stromberg-Carlson Tel. Mfg. Co., Rochester, New York, a switching device.

This invention consists of a plate of insulating material provided with openings through which pass the actuating-buttons 3 3. A lower bar, 4, supports switch springs 5 5, set in slots 6 6.

Contact buttons have V-shaped indentations 16, cut into opposite sides to be engaged by V-shaped indentations 17, at the ends of actuating switch-springs 18 18. This structure causes springs 18 to be forced apart to engage other switch springs when the button is depressed. The extended locking portion, 15, of each button is so disposed below indentations 17 as to prevent the buttons from leaving their openings when sud-



denly snapped back to the inoperative position. To prevent the buttons from turning and to maintain the faces 19 19 parallel with the switch springs, a keyway 20 is provided in the walls of each of the openings 2, and this is engaged by a key 21 on the actuating button. The entire combination provides a key in which the springs are so disposed that they extend transversely of the frame, so that all points are fully in view, and adjustable from either side, and in which the actuating buttons are readily removable from their openings and are interchangeable.

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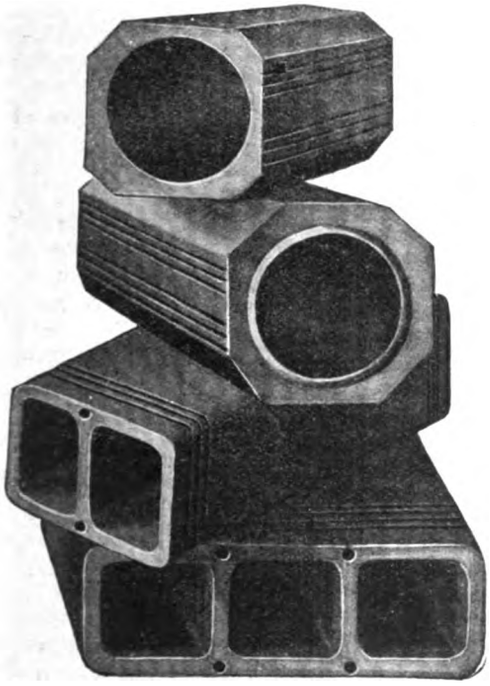
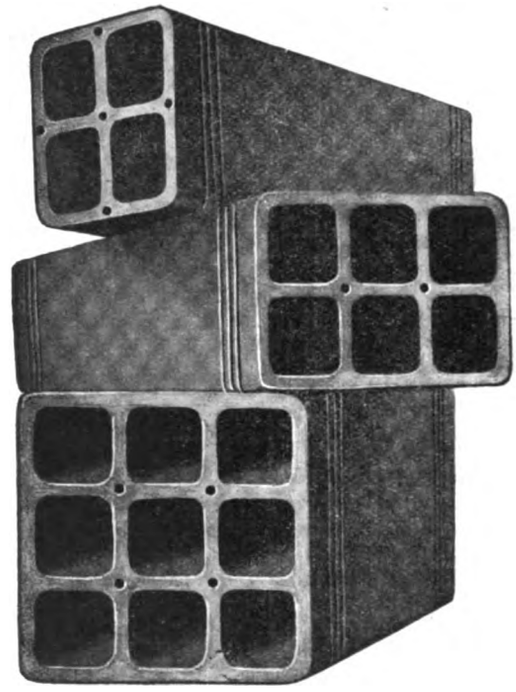


SINGLE DUCT
3¼ inch Round Bore
3½ " " "
4 " " "
3½ " Square "
3¼ " Round "
(Socket Joint)

MULTIPLE DUCT
2, 3, 4, 6 and 9 Duct
3¼ inch Square Bore
3½ " " "

MULTIPLE DUCT
2, 3, 4 or 6 Duct
3¼ inch Round Bore



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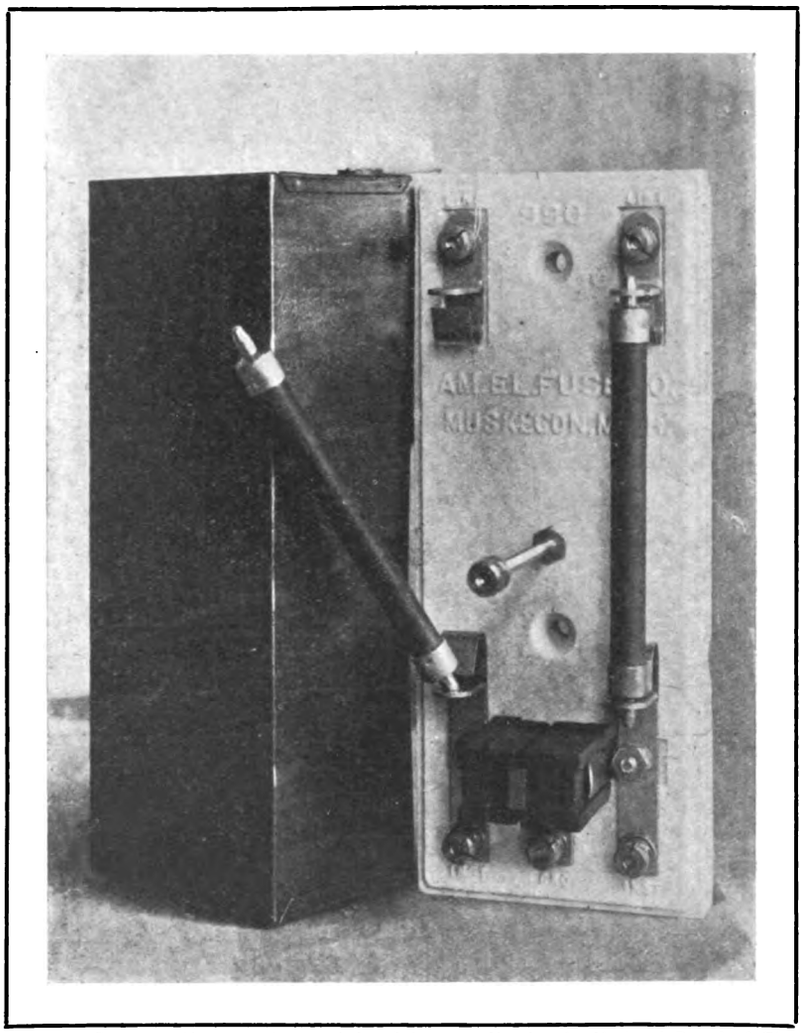
AN APPROVED SUB-STATION PROTECTOR.

THE use of approved protective appliances at sub-stations is not only one of the most effective means of safeguarding the persons and property of subscribers, but provides for a telephone company immunity from damages in most cases of actual injury. In order that its customers may fully protect themselves in cases of the accidental communication to their circuits of high tension currents, the American Electric Fuse Company, Muskegon, Mich., has produced a number of new individual station protectors that have been fully approved and listed by the National Board of Fire Underwriters.

The appearance of one of these, the No. 990 protector, is indicated by the illustration which appears in the centre of this page. This protector embodies in its construction a number of especially good points, from both theoretical and practical standpoints of operation and maintenance. All of the protective apparatus is mounted upon a raised porcelain block about three-quarters inch thick, making a substantial base which will not warp. The mountings are of extra heavy brass, to insure their remaining permanently in position. These are so arranged as to form a thoroughly positive connection for the fuse, and yet to permit its removal or the placing of a new fuse almost instantly, without the use of tools. The binding posts will take any ordinary size of wire. The slotted thumb nuts make it easy to handle them with the fingers, and make a final turn with a screwdriver if necessary. The operating parts of the protector include carbons with extra large surfaces, and a fibre covering for the fuse wire, which is lined with asbestos braid, making fire impossible.



American Protector No. 990, Approved for Substation Use by the National Board of Fire Underwriters.

The front of the protector is covered by a metal case, held in place by a single thumb screw on a pin projecting through an opening in the middle of its front surface. This case is firmly put together, and the fibre bushings for the entering wires are firmly set in place. The entire instrument is constructed in a thoroughly reliable and substantial manner. The company has prepared a new catalogue in which are full descriptions of this protector and other apparatus for use at sub-stations, cable terminals, etc. This book may be obtained upon request.

THE VOTE-BERGER COMPANY, La Crosse, Wis., is extending the applications of the iron wire ballast principle to telephone circuits in a number of very interesting ways. For some time past, wherever it has been exhibited, and especially during the recent Electrical Show at the Coliseum in Chicago, the company's switchboards embodying this principle have attracted very much attention. At the Electrical Show there was exhibited a section of multiple common battery switchboard in which the signals were controlled by iron wire ballast without the use of relays. This exhibit was a constant center of attraction to telephone men, and won favorable comment from engineers.

So general has become the interest on the part of those who wish to obtain accurate and reliable information concerning the theory and practical application of this iron wire ballast principle that the company has made arrangements to have its Engineering Department handle correspondence of this nature. Those who make inquiries may thus be sure of obtaining full and accurate information. Letters of this character should be addressed to *Department B*, The Vote-Berger Company, La Crosse, Wis.

This company, in addition to the success achieved with its iron wire ballasted circuits, is finding an extended market for its V-B express switchboard, the V-B ringer, the pendant telephone, D. & T. anchor and its other lines of telephone apparatus.

W. C. STERLING & Co., of Monroe, Mich., have been awarded a contract for supplying the Home Telephone Company of Detroit, Mich., with 5,000 poles.

LOUIS M. PIGNOLET, 78 Cortlandt street, New York City, reports that the use of his voltmeters and volt-ammeters by small telephone companies is rapidly increasing. It was formerly the custom to determine the nature of the trouble by a rough test with a magneto, and then send a man to look for it along a whole line; at the present time, however, the economy of the plan of finding out in advance just where the trouble is to be found has been recognized. There are also many tests which can be advantageously made in the work room. Full information concerning these instruments may be obtained by writing to the manufacturer.

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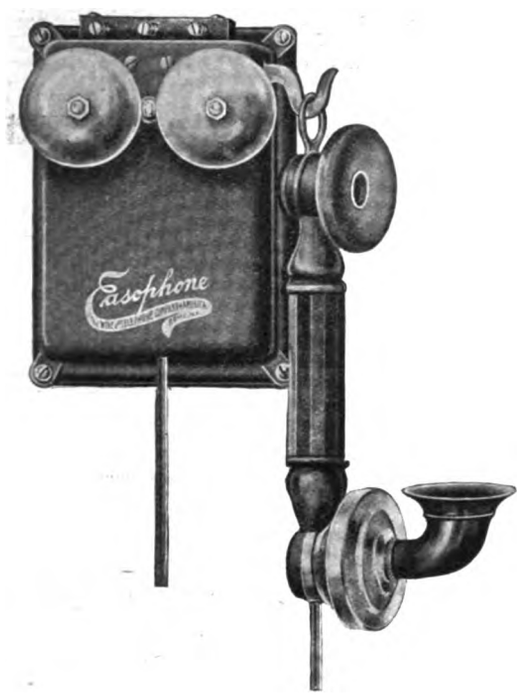


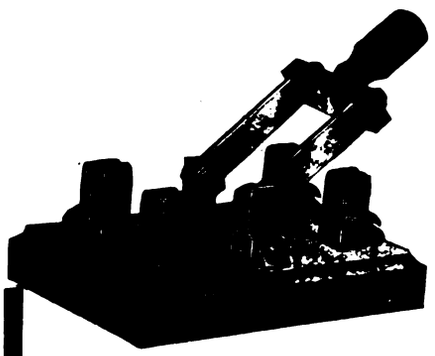
Easophones
The WIRE and TELEPHONE COMPANY of AMERICA
ROME, N.Y.

Long Distance Hand Telephone
Long Horseshoe Magnet Receiver

SOLID BACK TRANSMITTER — SINGLE COIL RINGER
NO EXPOSED CONNECTIONS — REVERSIBLE HOOK

WRITE FOR BULLETIN No. 101

THE WIRE & TELEPHONE COMPANY OF AMERICA
ROME, N. Y.



If you are starting a new company, you don't need an expensive switchboard. We have devised a simple system of double throw knife switches that will do the work quickly and well.

NO DROPS NO JACKS
Just the TRUMBULL SWITCH

with the "U" clip that insures perfect contact.

When the growth of your exchange requires it, you can get a switchboard and use the old switches for innumerable other purposes.

Write for Diagram and Information

TRUMBULL ELECTRIC MFG. CO.
618 Woodford Ave., PLAINVILLE, CONN.

THE NEW PAY STATION

NICKELS
DIMES
QUARTERS
HALF-DOLLARS

are all dropped into

THE ONE SLOT

and each makes

A PERFECTLY DISTINGUISHABLE SIGNAL

READY SOON
Ask about them NOW

LIVERMORE PAY-STATION CO.
4 Bowker Street BOSTON, MASS.

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THE WEEK'S MESSAGES

NEW COMPANIES.

IGO, CAL.—The South Fork Telephone Company has been organized, and has already constructed part of its system. Millard Hubbard is one of the organizers of the company.

GALATIA, ILL.—The Galatia Independent Telephone Company has been incorporated with a capital stock of $1,056. Among the incorporators are S. D. Lockwood, C. E. Robinson and Noah Reynolds.

MARSHALL, ILL.—The small mutual telephone companies in Marshall and vicinity are to be incorporated under the name of the Farmers' Mutual Telephone Company of Clark County, having refused offers of connection with the Bell Company.

PLEASANT HILL, ILL.—Articles of incorporation have been filed by the Farmers' Mutual Telephone Company of Pike County. It has an authorized capital stock of $2,500, and the incorporators are F. D. Roberts, B. A. Galloway and W. S. Freeman.

ROBINSON, ILL.—The Southeastern Illinois Long Distance Telephone & Telegraph Company, of Robinson, has been incorporated with a capital stock of $2,500. It will construct and maintain telephone and telegraph systems, and among those interested are W. M. Long, F. W. Lewis and C. R. Harris.

SALEM, IND.—Articles of incorporation have been filed by the Mill Creek Telephone Company. It will construct, equip and operate a telephone system in Washington County, and Louis C. Carter has been made president.

COUNCIL HILL, IND. TER.—The Council Hill Telephone Company has been incorporated with a capital stock of $2,500, and the following officers have been elected: H. E. Bell, president; J. R. Head, vice president; Adam Pence, treasurer; H. M. Sappington, secretary.

LAKE ANN, MICH.—A new Independent telephone company, to be known as the Lake Ann and Oviatt Telephone Company, has been organized at Oviatt. It is the company's intention to build a line between Lake Ann and Oviatt, with branches in many other directions.

ENDEE, N. M.—Articles of incorporation have been filed by the Endee-Tucumcari Farmers' Mutual Telephone Company. The company has an authorized capital stock of $10,000, divided into two hundred and fifty shares of the par value of $40 each, and its principal place of business will be located at Endee. Among the incorporators are R. E. Dever, E. E. Hedgecoke, William Wharton, C. L. Fallwell and J. M. Hedgecoke, all of Endee.

LEWBEACH, N. Y.—An Independent telephone company is being formed by the business men of Lewbeach for the purpose of constructing lines between this city and Livingston Manor, Hardenburgh and other points.

COOPERTON, OKLA.—Articles of incorporation have been filed by the New State Telephone Company of Cooperton. The capital stock is placed at $25,000, and among the incorporators are W. S. Ainsworth, F. King, B. M. Rogers and E. V. Kakestraw, of Gotebo; W .R. McKee, John Funk and L. L. Case, of Cooperton.

EARLSBORO, OKLA.—The Farmers' Telephone Company, of Earlsboro, has been incorporated with a capital stock of $5,000, and the following officers elected: P. H. Downing, president; James Turner, vice-president; E. G. Alfry, secretary, and C. L. Woolsey, treasurer. The construction of fifty miles of line will be commenced at once, and it is the company's intention to eventually extend its system to Shawnee.

FARGO, OKLA.—The Blue Ridge Telephone Company, of Fargo, has filed articles of incorporation. The capital stock is placed at $1,000, and the following are among the incorporators: G. E. Cashman and S. A. Hall, of Gage; J. J. Johnson, Louis Zahn, W. H. Morgan, J. E. Hutchinson and Will Stephens, of Fargo.

HYDRO, OKLA.—Articles of incorporation have been filed by the Moundview Telephone Company, of Hydro. The company has an authorized capital stock of $2,000, and the incorporators are W. H. Dooley, J. F. Ralf, E. J. Eperly, G. H. Reher, E. Lemon, R. S. McKee and F. L. Newton.

NILES, OKLA.—The Niles Telephone Company has been incorporated with a capital stock of $1,000. Among those interested in the new enterprise are W. F. Stipp, J. E. Starbuck and J. B. Green, of Hinton; E. E. Longfellow and H. W. Nance, of Niles.

BRADLEY JUNCTION, PA.—The farmers west of Bradley Junction have organized an Independent telephone company to be known as the Banner Rural Telephone Company. It is the company's intention to connect its lines with those of the Northern Cambria Rural Telephone Company, and the following officers have been elected: President, Alex. Strittmatter; secretary, H. J. Buck; treasurer, J. M. Huber.

BRANSFORD, TEXAS.—The Bransford Independent Telephone Company has been formed, and is building a line to Grapevine. The company expects to connect its lines with the Independent systems of Worth.

REGINA, SASK., CAN.—The Grain Growers' Association, of Regina, Saskatchewan, has called upon the province to at once install a government owned telephone system, as the association has decided that the Bell Company's service and system is inadequate and unsatisfactory. W. J. Stevens, of Indian Head, Sask., is looking after the matter for the association.

FRANCHISES.

LELAND, ILL.—The village board of Leland has granted a franchise to the Farmers' Telephone Company.

NORTHFIELD, MINN.—The city council of Northfield has been petitioned by the Northfield Telephone Company for permission to install an exchange in this city.

SULPHUR SPRINGS, TEXAS.—An Independent telephone franchise has been asked for at Sulphur Springs by the Rural Telephone Association of Hopkins County, whose intention it is to establish a competing system to that of the Bell Company.

FINANCIAL.

LOS ANGELES, CAL.—The Home Telephone & Telegraph Company, of Los Angeles, expects to increase its annual dividend from 4 per cent to 5 per cent.

BOISE, IDAHO.—At a meeting of the Independent Long Distance Telephone Company, held at Boise, the capital stock was increased from $500,000 to $1,000,000.

MASCOUTAH, ILL.—The capital stock of the Looking Glass Prairie Telephone Company has been increased from $10,000 to $20,000.

BRONSON, IA.—A dividend of 15 per cent has been declared by the Bronson Telephone Company.

WARREN, N. H.—The Baker's River Telephone Company has increased its capital stock from $8,000 to $12,000.

LOWVILLE, N. Y.—A dividend of 5 per cent upon its preferred stock, payable March 1st, 1907, has been declared by the Black River Telephone Company.

MIDDLETOWN, N. Y.—The Middletown Telephone Company has declared a dividend of six per cent. on its preferred stock.

LANCASTER, O.—The Lancaster Telephone Company has declared its regular quarterly dividends of 1 per cent and 1½ per cent on its common and preferred stock, respectively.

BENTON, PA.—An annual dividend of five per cent. has been declared by the Farmers' Telephone & Supply Company of Benton.

SOMMERVILLE, PA.—Ten thousand dollars has been added to the capital stock of the Summerville Telephone Company.

COMBINATIONS.

STREATOR, ILL.—Messrs. Conklin, Parker and others, of Streator, who own the system in this city, have purchased the telephone system at Leavenworth, Kan., and it is their intention to reconstruct and enlarge the plant.

ST. PETER, MINN.—The Nicollet County Telephone Company is planning to improve its system by taking over the Sibley County line owned by A. A. Buck, of Henderson. This will involve the expenditure of upwards of $12,000.

ELECTIONS.

COVINGTON, ILL.—The Covington Mutual Telephone Company has elected H. H. Bening, president; Fred Weeke, vice-president; J. F. Kemper, secretary; William J. Hughes, treasurer; Fred Reinhardt, trustee.

HIGHLAND, ILL.—The following officers have been elected by the Highland Farmers' & Merchants' Telephone Company: J. S. Cuming, president; J. S. Hoermer, vice-president; Leo. Brandweiee, secretary; Fred. Pauly, treasurer.

GRANVILLE, IA.—The Granville & Remsen Telephone Company has elected the following directors: Henry Sauer, William Hensing, J. N. Trienen, James Mulvany, A. P. Dornbush, E. Budden and P. Tonsfeldt.

KELLOGG, IA.—At a recent meeting of the Kellogg Mutual Telephone Company the following officers were elected: J. E. Craven, president; L. C. Wutts, vice-president; W. H. Stuart, secretary; J. W. Reimer, treasurer.

NORRIDGEWOCK, ME.—The following officers have been elected by the Farmers' Telephone Company: President, J. W. Packard, Skowhegan; business manager, Frank L. Ames, Norridgewock; directors, J. W. Packard, F. L. Ames, G. H. Foster, W. W. Greason, J. M. Brown and Anson Baker.

GRANBY, MASS.—The directors of the Granby Telephone Company are G. F. Eastman, H. H. Macey, G. F. Bell, S. B. Dickinson, H. S. Taylor, D. R. Barnes and A. T. Warner.

HIGHLAND, MICH.—The Highland Rural Telephone Company has elected W. S. Seaver, president; H. Gaunt, vice president; F. Skinner, secretary; Geo. Potts, treasurer.

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All With The

"Patent Drip Petticoats"

THE HEMINGRAY-GLASS CO.

Office, Covington, Ky.
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Established 1848

Our Price is Right

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TELEPHONE MADE

with all connecting wires, binding posts and terminal screws fully concealed

To Prevent Trouble

and with no exposed metal parts in the circuit to

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from lightning while using the instrument. Send us your inquiry and we will "SHOW-U" at our expense an interesting proposition.

INTERNATIONAL TEL. MFG. CO.
Harrison and Clinton Sts., Chicago

MICHIGAN WHITE CEDAR POLES

In addition to our regular stock of poles in our Escanaba Yards, we have a special stock of

4 inch --- 20 foot
White Cedar Poles

5 inch --- 20 foot
White Cedar Poles

at Hiawatha, Michigan

6 inch --- 30 foot
White Cedar Poles

at Alpena, Michigan

We do not wish to concentrate this stock and can offer you a good proposition.

We can ship at once a large number of Southern Red Cedar Poles

7 inch --- 30 foot
7 inch --- 35 foot

Write us for delivered prices

KELLOGG SWITCHBOARD & SUPPLY CO.

CHICAGO, ILL.

EVERY COIL

of **Roebling Double Galvanized Telephone Wire** bears a tin tag and lead seal upon which the word "**Roebling**" is stamped.

Don't accept Wire without the **Roebling Seal.**

JOHN A. ROEBLING'S SONS CO., - TRENTON, N. J.

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THE WEEK'S MESSAGES

KIBBIE, MICH.—The following officers have been elected by the Kibbie Telephone Company: President, S. M. Trowbridge; vice-president, Robert Adkin; secretary and treasurer, J. H. Tripp; directors, H. M. Olney, O. M. Vaughan, G. L. Green, W. S. Bradley and T. A. Bixby.

LESLIE, MICH.—The officers elected by the Leslie & Onondaga Telephone Company for the ensuing year are: President, H. Baldwin; vice president, A. DeLaur; secretary and treasurer, F. C. Baldwin.

VIOLA, MINN.—The Viola Telephone Company's officers for 1907 are: President, J. C. Bierbaum; vice president and treasurer, G. L. Wood; secretary and manager, H. A. Doty; directors, J. C. Bierbaum, G. L. Wood, H. A. Doty, W. G. Early and C. H. Shellhammer.

MENDOTA, MO.—The following officers and directors have been elected by the Chariten Telephone Company: R. W. Maning, president; B. W. Porter, vice president; L. C. Corpron, secretary; M. Maring, treasurer; A. F. Williams, purchasing agent; directors, R. W. Maning, B. W. Porter, A. F. Williams, L. C. Corpron, John Farnsworth, A. Carminey, H. Forbes, D. Simmons, B. Cloniger, J. Hart, O. L. Pickins, Geo. Hunt, M. Maring. The company, which was incorporated one year ago, now has connection with seven adjoining towns.

BEATRICE, NEB.—The following officers have been elected by the Gage County Independent Telephone Company: A. R. Morris, president; A. R. Patton, secretary; A. H. Krause, treasurer; directors, J. B. Reiff, S. C. Van Riper, L. M. Swett, George Search, Chas. Mason and Julius Neumann.

KENESAW, NEB.—The following directors have been elected by the Kenesaw Independent Telephone Company: S. A. Westing, D. D. Norrin, H. R. Coplin, E. J. Latta, Stephen Schultz, G. W. Wolcott, W. H. Parmenter and A. S. Howard.

PORT JERVIS, N. Y.—The Port Jervis Telephone Company has named as directors M. Depuy, F. N. Mason, S. H. Gariss, C. P. Reuling, J. T. Van Etten, J. P. Van Etten, W. A. Parshall, J. D. Swinton, E. F. Mapes, W. L. Cuddebach and E. B. Lambert.

CONESTOGA, PA.—The following directors have been elected by the Conestoga Telephone Company: Jacob Hartz, L. Keller, E. L. Zerr, H. G. McGowan, J. W. Flannery, J. F. Boyer, F. B. Brown, C. H. Armour.

SUMMERVILLE, PA.—The officers of the Summerville Telephone Company are: President, J. K. Brown, Summerville; vice-president, William Osborn, DuBois; secretary, J. S. Hammond, Reynoldsville; auditor, S. M. McCreight, Reynoldsville; treasurer, D. L. Taylor, Brookville.

MISCELLANEOUS.

REINBECK, IA.—The United Telephone Exchange at Reinbeck, formerly owned by H. B. Shoemaker, has become the property of J. H. Shoemaker, of Waterloo, and Robert Parker, of Traer.

MORAN, KAN.—The Moran Telephone Company has passed from the hands of Messrs. Thompson and Wilson to those of Epperson Bros., of La Harpe.

WEST PLAINS, MO.—The West Plains Telephone Company has been purchased by W. L. Bell, of Kansas City.

PERSONAL.

EDWARD BARRON has been appointed manager of the Wisconsin Telephone Company's exchange at Green Bay, Wis.

J. W. CREWS has taken charge of the business of the Southern Bell Telephone and Telegraph Company centering at Charlotte, N. C., with the title of assistant general manager.

C. H. DALEY, of Birmingham, Ala., has been made manager at the Warrior exchange of the Southern Bell Telephone and Telegraph Company.

ANDREW M. DRISCOLL has been appointed manager of the New England Telephone & Telegraph Company's exchange at Southbridge, Mass.

L. M. JONES has been promoted from the management of the exchange at Tulsa, I. T., to a position in the construction department of the Pioneer Telephone Company.

New Construction in the Field

FAYETTE, ILL.—Many improvements are to be made in the lines of the Fayette Telephone Company at Barr.

FERDINAND, IND.—The lines of the Home Telephone Company are being overhauled at Ferdinand.

WASHINGTON, IND.—The Home Telephone Company contemplates the expenditure of between $40,000 and $50,000 in the rebuilding of its system. This step has been made necessary to take care of the rapidly increasing business of the company.

EARLING, IA.—A new switchboard has been installed by the Earling Telephone Company to meet the growing demand for service.

LASSWELL, KAN.—The Ranchman's Telephone Company is building a new exchange at Medicine Lodge. The company also expects to build a number of other mutual lines throughout the country, effecting long distance connections with Wichita and many other points south and east of Lasswell.

SHELBURNE FALLS, MASS.—New lines are being built by the Deerfield Valley Telephone Company at Shelburne Falls.

GOLDSMITH, NEB.—Many extensions in its lines are under consideration by the Southern Nevada Telephone & Telegraph Company. Copper metallic circuits are being strung from Goldfield to Rhyolite and Greenwater, and additional lines are planned between Tonopah and Goldfield.

WYMORE, NEB.—Considerable new cable is being strung by the Independent Company at Wymore, and it expects to shortly install an exchange at this place.

LEONARDSVILLE, N. Y.—The lines of the Leonardsville Telephone Company are to be extended to Bridgewater and its system otherwise improved.

AKRON, O.—Many improvements are being made by the People's Telephone Company in its system at Akron.

IRONTON, O.—Lines are being constructed by the Home Telephone Company from Ironton to Marion, which will give connection with Wilgus, Getaway and Lecta.

KENTON, O.—It is the intention of the Kenton Telephone Company to expend $20,000 in the improvement of its system. A new switchboard having a capacity for 4,000 subscribers is to be installed, as well as a quantity of additional cable to bring the outside capacity up to that of the new board. The company expects to make its system up-to-date in every particular.

MACHIAS, N. Y.—The Machias Telephone & Electric Company, recently incorporated, is rapidly extending its system, and will soon have between forty and fifty miles of line in operation.

SHERBURNE, N. Y.—Many improvements are being made in the plant of the Sherburne Telephone Company.

NORWALK, O.—The Local Telephone Company, which has just completed a line from Norwalk to Olena that will be connected with the Olena Telephone Company, contemplates the erection of additional lines to North Fairfield to take care of its increasing business.

PORTSMOUTH, O.—A new line is being erected by the Portsmouth Telephone Company from Portsmouth to Otway.

SAND CREEK, OKLA.—New lines have been built by the Sand Creek Rural Telephone Company from Sand Creek to Wakita.

MONTROSE, PA.—Many improvements are being made in the system of the Montrose Telephone & Telegraph Company.

BIG SPRINGS, TEX.—A new line is to be built by the Big Springs Telephone Company from Big Springs to Abilene.

FERRYVILLE, WIS.—New lines are being built in Freeman by the Ferryville Telephone Company.

LENA, WIS.—The Farmers' and Merchants' Telephone Company is extending its lines east of Lena.

PEMBINE, WIS.—It is the intention of the Amberg Telephone Company to build a toll line from Pembine to Niagara. The line will be built along the St. Paul road to Anderson's Spur and thence to Niagara. Lines will also be built to towns on the Wisconsin and Michigan road as far as Miscouno Inn.

WHEATLAND, WIS.—The lines of the Burlington, Brighton & Wheatland Telephone Company are being extended in Wheatland.

ZENDA, WIS.—The New Era Telephone Company, of Hebron, is constructing three new lines to Zenda.

MONTREAL, QUE., CAN.—The Canadian Pacific Railroad Company has decided to install a telegraphone system along its North Shore division, and, if it proves satisfactory, it will be installed along the company's telegraph wires.

PACHUCA, MEXICO.—The Hidalgo state government has made a contract with Messrs. Stephen Waters and Jonas Alfred Renstrom for the establishment of a telephone system to unite Pachuca with the various mining towns and villages of the state.

UNDERGROUND.

EXCELSIOR SPRINGS, MO.—The Home Telephone Company is to place its wires underground in the business district of Excelsior Springs.

ST. JOSEPH, MO.—The Citizens' Telephone Company expects to place its wires underground in the business portion of St. Joseph.

OSWEGO, N. Y.—The Common Council of Oswego is considering the advisability of compelling telephone companies to place their wires underground.

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OUR NEW STOCK COMING IN 100,000 TO 150,000 BY APRIL 1st
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Michigan and Idaho
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20 and 25 foot lengths for rural telephone lines a specialty.
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POLES and PILING
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PRODUCERS AND SHIPPERS OF
WESTERN CEDAR POLES
AND MANUFACTURERS OF
RED FIR CROSS ARMS
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Edison Telephone Lamps

Made for all classes of service from 0.1 to 0.5 candle power and from 4 to 40 volts.

Variety of bases suited for different switchboards.

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Harrison, N. J.

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For the protection of our customers we advise that Klein's Pliers are being imitated to LOOK LIKE KLEIN'S. This, however, does not make them Klein's.
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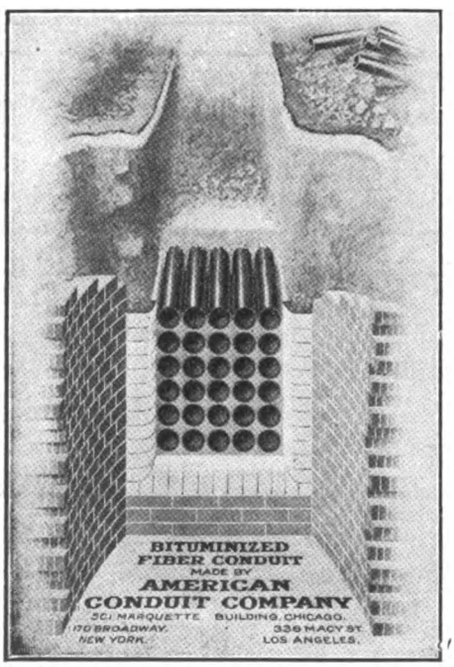

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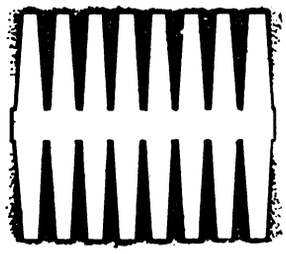

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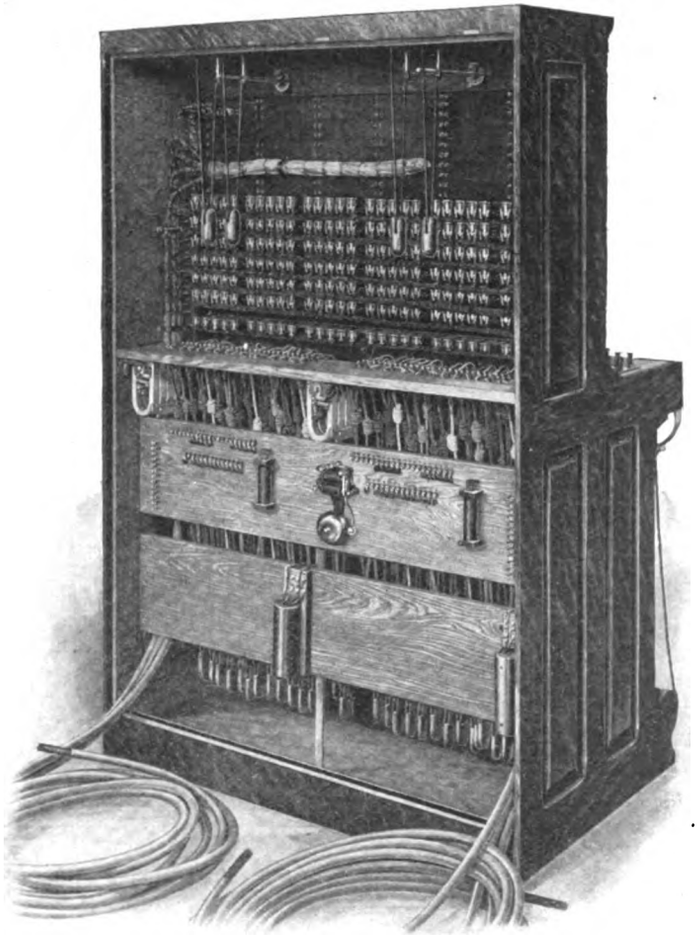

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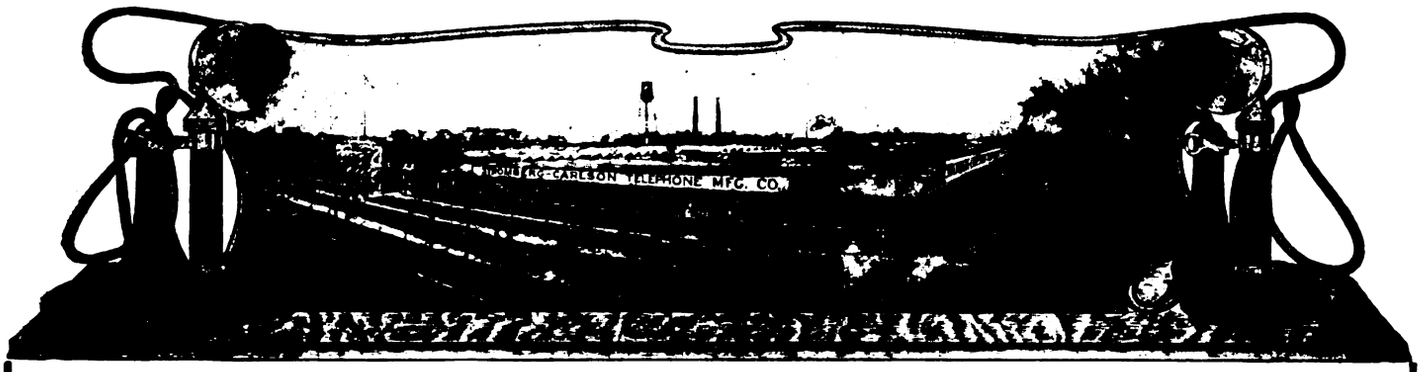

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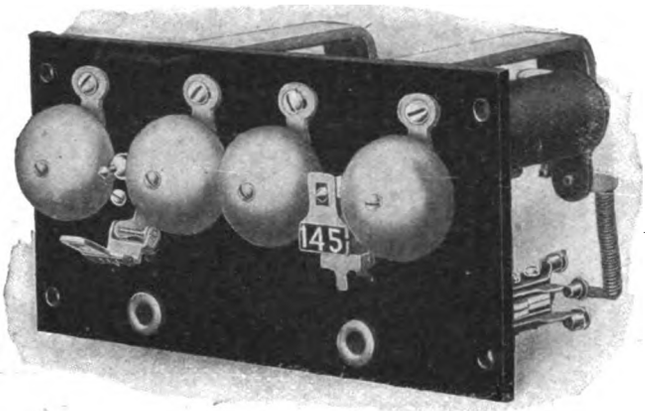

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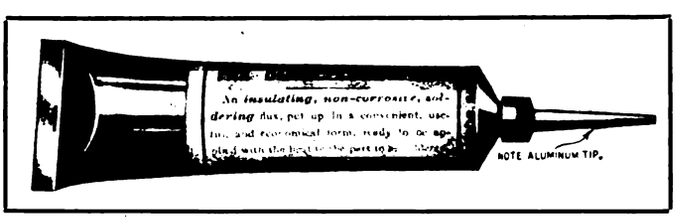

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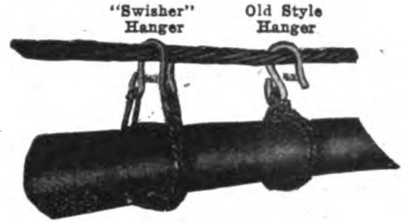

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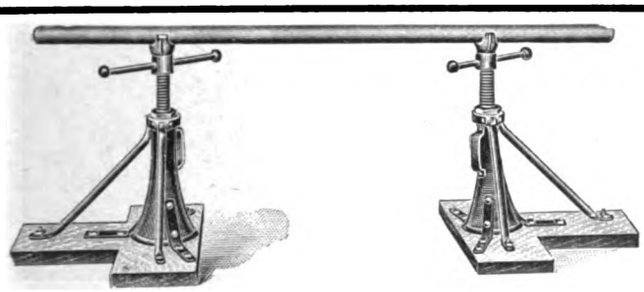

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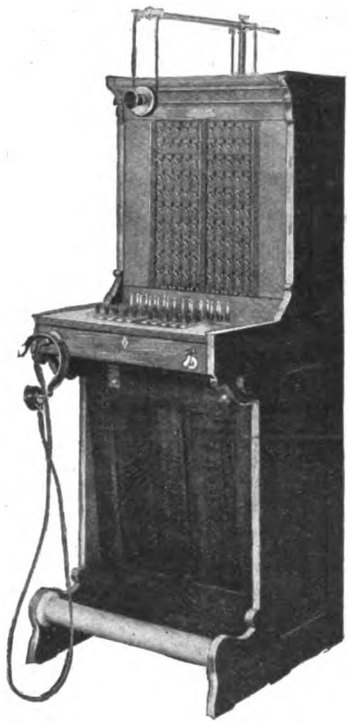
TELEPHONE APPARATUS

MAGNETO SWITCHBOARDS

ARE EQUIPPED WITH KELLOGG

WATCHCASE HEAD RECEIVER



This type of a receiver is very compact.

The shell is entirely made of hard rubber and has a removable ear-piece.

The spring steel headband is covered with leather and is provided with a hinge, so that it may be swung backward. It is so constructed that it will not catch in the hair of the operator.

It is impossible for the operator to get a shock from this receiver, as there are no exposed metal parts, which will make contact with the head.

THE CORD TERMINALS are so constructed that standard cord tips can be used on receiver cord, and be practically concealed. This construction absolutely prevents a short circuit in the receiver. Cords can be securely attached or removed without opening the case.

The six semi-circular MAGNETS are supported by the case from the back and sides. They are made of special magnet steel, and retain their magnetism indefinitely.

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THE DIAPHRAGM is made of ferro-type metal.

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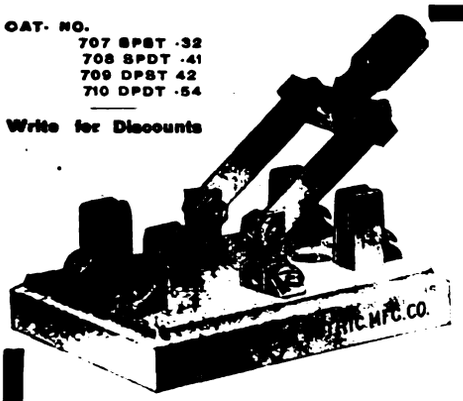

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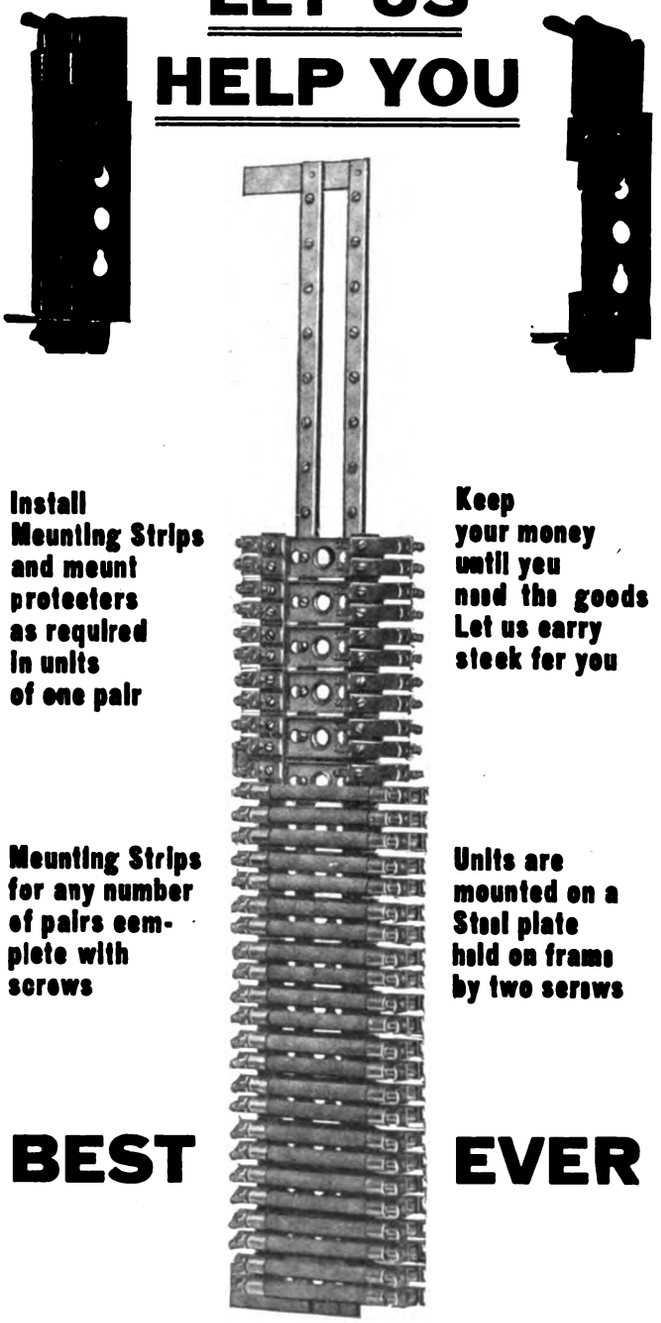

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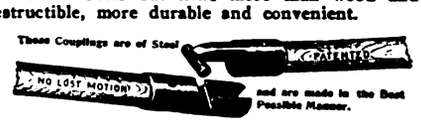

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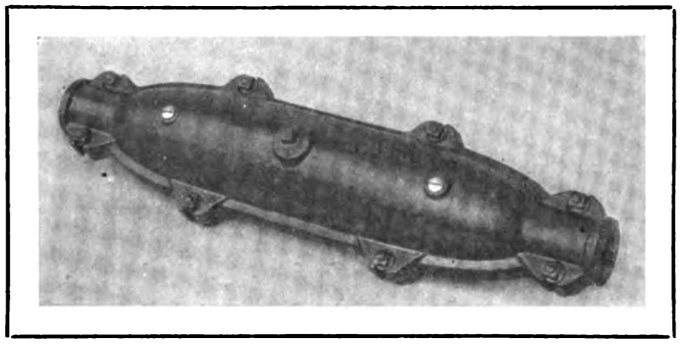
VOLUME XV. SATURDAY, FEBRUARY 9, 1907. NUMBER 6

Telephone System of Sewerage Plant at Schöneberg, Germany

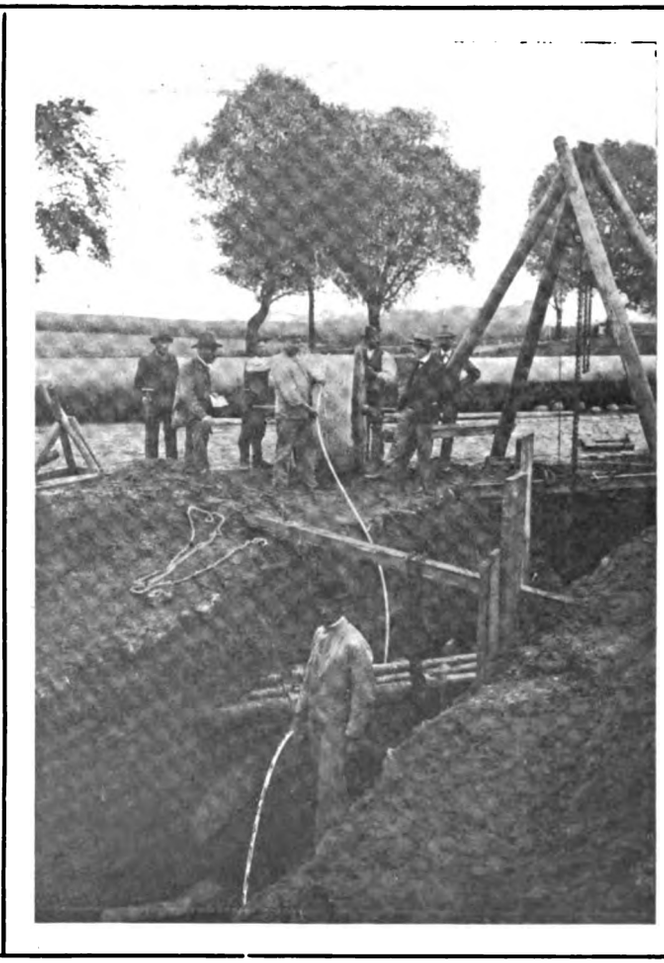
By Dr. Alfred Gradenwitz.

An all-cable telephone system was recently installed in connection with the municipal sewerage plant of Schöneberg, Germany, which presents several novel and interesting features. Cables were in this instance, as in many others, preferred to overhead conductors, which are easily damaged by gales, snow, hoarfrost, etc., while operation is apt to be interfered with by thunder storms. While overhead conductors are frequently substituted for cables in spite of the above drawbacks this is only done for the sake of economy. The relatively high cost of using cables is, however, in the first place dependent upon the necessity of digging a special cable trench. Whenever such a ditch is to be dug in any case, as for instance with sewerage and water distributing plants, the objection to the laying of cables on account of cost disappears. In the present case the difference in cost between the use of cable and that of overhead conductors was still further reduced owing to the immediate neighborhood of the protecting sewerage pipe, which made it unnecessary to provide a roofing, as over an ordinary conduit. In the Schöneberg system the cost of laying the cable over the considerable distances between the terminal stations was still further reduced to a very material extent by using the Pupin system, which allows a relatively small copper conductor and correspondingly thin and cheap copper cable to be used, thus enabling excellent transmission to be obtained at a low cost.



Iron Box in Which Pupin Loading Coil is Placed.

Laying Cable in Trench Beside Large Sewage Pipe.



Running the Cable Into the Trench From the Reel.

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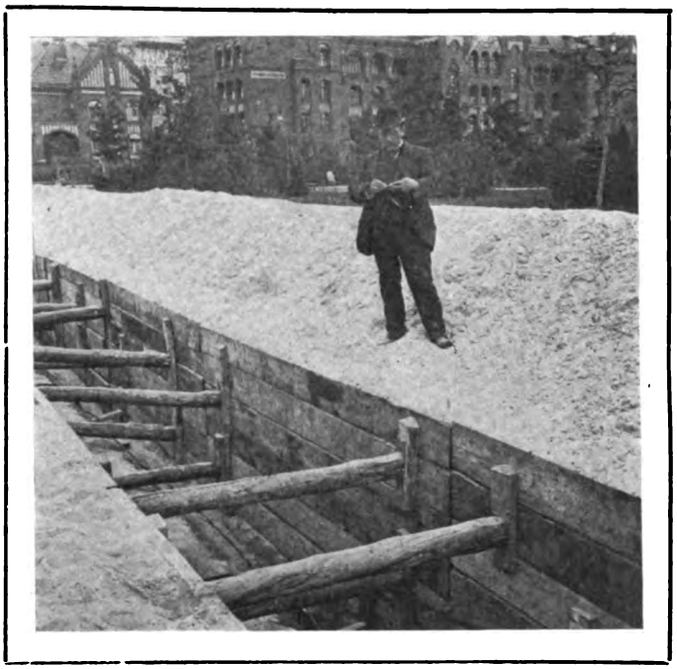
Messrs. Siemens and Halske, Ltd., have in the course of the last few years made contracts for many telephone plants in connection with municipal sewerage systems. In all these the cable is laid in the ditch very close to the sewage pipe. The illustrations presented with this article show some of the features of this work as carried out along the pipe line between the city of Schöneberg, near Berlin, and its sewage fields in the neighborhood of Ragow. While the distance between the two places is about 27 kilometers, the extensions of the telephone system were of such length as to make the maximum talking distance upwards of 60 kilometers. This distance is sufficient to prohibit the use of an unloaded cable, owing to the fact that in such an event the capacity effect would be so great as to make transmission so indistinct as to be unintelligible.

In general the methods of carrying on the work of placing the cable were very simple. The reels were set up beside the trench, and cable unwound and carried along beside the pipe, being simply laid on the ground. At some places high pressure pipes had to be put in service before the cable was available. Here ducts were laid and when the cable came to hand they were rodded and drawn in as is usual in the ordinary city system. At intervals along the cable the Pupin loading coils were connected. Protection for them was furnished by small iron boxes, of the type illustrated at the head of the first page of this article.

For connecting the various lines in the cable together as required by the service a small switchboard was provided at the headquarters of the system.



Reinforced Excavations. Cable is Laid Up Along the Walls.

One of the Windlasses Used for Drawing Cable Through Ducts.

Windlass Set Up Over Manhole, Ready for Use.

JOINT USE OF POLES BY TELEPHONE AND ELECTRIC LIGHT COMPANIES.

FACTORS governing the joint use of poles for telephone wires and those carrying heavy currents, at a comparatively high voltage, are the subject of frequent consideration by telephone companies in various parts of the country. Concerning this important matter an engineer connected with one of the large operating companies writes as follows:

In allowing the use of telephone poles by electric light companies there are several points which must be given consideration. It is evident, in the first place, that a certain amount of danger is imposed on the telephone company both as to its employees and its service. In general the electric light company uses copper wire, and larger wire than the telephone company. The telephone wires are, therefore, more liable to breakage than the light wires, particularly if telephone wires are of iron. For this reason, as well as to provide for the safety of employees, it is the best practice, where it is possible without serious expense, at any rate in the construction of new pole lines, to place electric light and power wires above telephone wires. In many sections of the country the Board of Underwriters will not sanction the use of iron circuits over copper power or light circuits. The iron circuit is much more liable to breakage from extreme cold, and this ruling will probably become very general throughout the northern states.

In an existing telephone line, however, where it is impossible to place light wires above them without lowering the telephone wires, so as to obtain the required separation, the objections are usually outweighed by the increased cost. The insurance against danger is not worth the price.

In this event provisions must be made, by contract or otherwise, to safeguard telephone service and employes, in order to avoid interruptions of service and delay in repairs. For this purpose it is customary for the telephone company to regulate the location of light wires and fixtures.

The vertical distance between wires may be reduced to a minimum of forty inches if the pole is gained every twenty inches.

(*Continued on page 88.*)

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The Iowa Clearing House*

By George T. Hewes.

IN the State of Iowa 95 per cent of the Independent long distance messages are transmitted to points within a radius of 100 miles from any given telephone station. Therefore, the vast number of telephone exchanges and stations throughout the State form a nucleus for the origination and destination of long distance messages which is destined to become greater each succeeding year.

We find no difficulty during the last few years in Iowa in interesting capital in the development of long distance toll lines in territory which is thickly covered with telephone stations, and in this respect the territory covered by South Dakota from Sioux City west to the Black Hills is naturally coveted by prospective investors, and you are to undergo the same transition that we have gone through.

There is no question in my mind but that for some few years to come about 95 per cent. of your long distance business will be within a radius of not more than 100 miles from any given station. You must first provide your cities and towns with numerous telephones which will act as feeders for long distance circuits which ultimately will become inevitable. The desirability has oftentimes been presented to you, no doubt, of your being able to talk with Chicago, New York and Boston, but I question whether many of the telephone men of South Dakota have ever availed themselves of this luxury, even if the privilege were extended without cost. Therefore, why should you at this particular time regard these extremely long distance connections with particular favor. As your facilities which are provided for communication within your trade territory are extended, the percentage of calls going over a distance exceeding 100 miles will be increased.

We, in Iowa, are beginning to realize this since the organization of our Clearing House. The Clearing House is the establishment where all interchanged messages going over more than one company's lines shall be audited and settlements effected between companies for balances due them with equity, fairness and impartiality. Therefore, such an organization which is to be maintained by all Independent telephone companies should be a special organization. We are incorporated under the laws of the State of Iowa. Article 3 of our constitution and by-laws is as follows:

"The object of this corporation, or business to be transacted, is to promote and regulate interchanged telephone service between Independent telephone companies, to pro-rate the earnings and to make settlement thereof between the companies over whose lines toll messages may pass, upon the terms provided in the by-laws of this corporation, check reports of toll messages, and do all things necessary to the adjustment of the proceeds of toll messages."

The expense of clearing interchanged business will be exactly proportioned to the number of messages cleared, and places the smaller company on an absolutely level basis with the larger company.

The first month's business cleared by our organization was for the month of March, 1906, at which time we cleared the business of six companies, and at the present time we have forty-two contracts signed by as many different companies for Clearing House service, and we are clearing the business of thirty companies for the month of December.

We have profited largely by the experience of the Michigan Independent Traffic Association, which has been engaged in this line of business during the past two years. Our methods are to a considerable extent original with us, for it is true that there are local conditions which require different methods in the long distance business, just as there are local conditions which control your different methods of handling your telephone exchange business.

The best information which we have been able to receive from the experience of others regarding the percentage of errors creeping into long distance messages is from the Michigan Traffic Association, who inform us that the percentage of errors is represented by 14.8 per cent. of the gross amount cleared. This was their efficiency after a period extending over a year of pro-rating business.

Our experience has been quite different, however. During the first four months of our pro-rating, the average errors was 5.4 per cent. of the gross amount cleared. We have been able to reduce this percentage of errors very materially. One of our recent compilations of figures discloses to us that the percentage of errors detected for the month of September will be approximately 2.8 per cent. of the gross amount cleared. We attribute this remarkable showing to the exchange of check numbers between operators. Without this exchange of numbers, I firmly believe that the percentage of errors will be far in excess of the percentage reported by the Michigan Independent Traffic Association. We believe that we have the system and we are encouraged in this belief on account of the recent action taken by the International Independent Telephone Association in convention at Chicago, when they recommended for adoption by all Independent telephone companies our system of telephone toll checks.

Our Clearing House has seen fit to issue Clearing House coupons which are being accepted by Independent telephone companies throughout the State of Iowa, whether members of the Clearing House or not, in the exchange of toll service. These coupons are gotten up in units of $10.00 and $25.00 each. They are to the Independent telephone companies what the interchangeable mileage book is to the Western Passenger Association in the railroad passenger traffic.

We are already effecting balances with the Nebraska Traffic Association for business which originates in Nebraska and terminates in Iowa and for business which originates in Iowa and terminates in Nebraska.

*Abstract from an address delivered before members of the South Dakota Independent Telephone Association at the Sioux Falls convention.

SOUTH AFRICAN TELEPHONE STATISTICS.

TELEPHONE development in South Africa is very low. Statistics issued by the Postmaster General show that there has been very little building outside of the centres of population, there being practically no rural lines such as exist in the United States. At the present time the country is not sufficiently thickly settled to support such systems in many districts on a commercial basis. In the Transvaal figures for the year ending June 30th, 1905, which are the latest available, show that in the district of Johannesburg there were 319.2 miles of lines, and a total of 7,657 miles of wire on poles and in cables. Corresponding figures for the district of Pretoria show 93.1 miles of lines, with a wire mileage of 1,350. The receipts for telephone service were $221,161.17 for this yearly period, a considerable increase over the corresponding period next preceding, when the telephone service brought in only $162,931.28.

The number of telephone subscribers in the principal cities is as follows:

Johannesburg	1,314
Pretoria	282
Germiston	52
Krugersdorp	30
Boksburg	33
Total	1,711

In addition to the stations of these subscribers there are 177 telephones operated by the government, of which the greater part are about evenly distributed between Johannesburg and Pretoria. There are 23 telephone pay stations for the receipt of messages in this State.

In Southern Rhodesia there are a far smaller number of telephones only five cities and towns being large enough to have an

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established exchange, the number of subscribers in each being as follows:

Salisbury	91
Buluwayo	117
Umtali	29
Selukwe	18
Gwelo	14

The receipts for the year beginning on the 31st of March, 1904, and ending on March 30, 1905, were $17,287.98. This is something over $2,000.00 less than the receipts for the previous year, when the returns were $19,121.48. The falling off is, of course, due to the serious depression of business which occurred during the year ending March, 1905, owing to the troubles in the State.

In Natal at the end of December, 1905, there were 2,304.5 miles of telephone wire, and the receipts for the telephone service amounted to $29,322.87.

A FOUR YEARS' BUILDING RECORD.

INDEPENDENT telephone development has made remarkably successful progress in Portland, Ind., during the past four years. About four years ago the telephone franchise was bought from the United Telephone Company by the Home Telephone Company, organized by a number of men who wished to keep the control of the telephone system in local hands. At that time between two hundred and fifty and three hundred patrons were receiving a very indifferent service. Its poor quality was due in a large measure to the use of equipment of old types. The men who bought the plant, after considering the development as it then existed, and the possibilities in the way of extensions, decided that the maximum capacity on which they could safely count would be about five hundred telephones. It was but a very short time, however, before they learned that their estimate had been much too low, and the growth has kept up rapidly until the present time. There are now 1,065 telephones connected to the lines of the Home company. In addition to its own instruments, the subscribers of the company have free connection with not far from 200 telephones at Salamonie

The Bell company was passed long ago in the race for business, and now handles only a very small proportion of the telephone messages transmitted in this territory. It has only 275 telephones in the town and surrounding country covered by the lines of the Home company, and most of its subscribers are more than six miles away from the city on a few rural lines. As in other places, much of the business which it now handles has been obtained by giving free service for three months; and it is stated that sometimes no rental at all is collected from favored subscribers, in order that it may retain the appearance of having a good hold in the territory.

That the Independent company merits success is in a measure indicated by the character of the construction shown in the accompanying photograph. This was made from a picture of a regular farm and toll line lead running to the north of the city of Portland. This lead was built not long ago to accommodate a sufficient number of lines to care for the ever increasing demands for Independent telephones in this locality. The rentals from the 1,065 telephone and the toll receipts have enabled the company to not only pay dividends at a good rate, but expend each year a considerable sum from the income of the plant for new equipment. The plant of this company is looked upon as highly efficient, both from an operating standpoint and in respect to its earnings. The success of the company is locally asserted to be due to the strength and good judgment of men who are thoroughly familiar with conditions in the territory in which it operates, its officers being: President, Frank White; secretary, E. E. McGriff; treasurer, Dr. C. W. Mackey; Morris Weiler, Lou Chamberlain, Judge J. W. Headington, Dr. W. P. Jones, Dr. J. T. Dickens and Dr. W. D. Schwartz. The active management of the business is in the hands of A. B. Baughn.

Straight Poles and Cleanly Run Wires in Indiana. At the Left Are the Men Who Do the Work.

JOINT USE OF POLES BY TELEPHONE AND ELECTRIC LIGHT COMPANIES.

(*Continued from page 86.*)

There should be a minimum opening between light wires at the pole of thirty-two inches; that is, the nearest wire on each side of the pole must be at least sixteen from the centre line.

All light wires should be attached by glass or porcelain insulators to cross-arms—not to brackets.

Where light drops are taken out laterally, insulated wires on porcelain knobs should be carried along the back of the arm to a transverse fixture at the end.

Where it is necessary to place a transformer on a joint pole it should be bolted to cross-arms and set out from the poles so far as not to interfere with climbing by it.

Where it is necessary to carry light or power loads up or down a pole through a telephone lead the light or power lead should be encased in approved conduit. The same rule applies to telephone wires carried through a light lead.

These are a few general requirements. Other regulations to fit local conditions and detailed arrangements are frequently necessary.

TENNESSEE CONSIDERING BILL REGULATING HIGHWAY RIGHTS.

THE Tennessee Legislature is considering a bill vesting in the county courts of each county in the State the title to all public highways and roads, and giving to the counties the right to grant or refuse rights of way on these highways to telegraph, telephone or railway companies. Telephone companies in Tennessee have recently met with many difficulties in securing rights of way along public roads. Under the old law any individual living along the line of the road may make complaint, being part owner of the highway by virtue of abutting property, and cause the county courts to refuse right of way. The Independent Long Distance Telephone Company, now

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building through the State, has taken a score of such cases to the courts and in numerous cases have failed to get right of way. If the new measure becomes a law parties applying for right of way will deal only with the county court.

TENNESSEE CONSIDERING PHYSICAL CONNECTION BILL SIMILAR TO THOSE PROPOSED IN SOME OTHER STATES.

SENATOR A. G. EWING has introduced in the Tennessee senate a bill requiring all telephone companies to connect subscribers with long distance lines of other companies. The bill provides, among other things, that the cost of making such connection shall be borne equally by the companies thus physically joined, and shall be made under the supervision of each. In case of a disagreement, each company may select an electrical engineer, and these two a third, to form a board to settle any questions involved in the dispute. The division of expense is to be equal.

For toll service a division of receipts shall be made in proportion to mileage, and for local messages a two-cent fee for switching may be charged. In relation to the discrimination of one company in favor of messages originating upon its own lines, there is a provision prohibiting such acts, and carrying a penalty of from fifty to five hundred dollars for each offence. It is provided that the Courts of Equity shall be given jurisdiction to enforce the provisions of the act.

A BILL COVERING THE GRANTING OF FRANCHISES IN CITIES OF BETWEEN 5,000 AND 25,000 INHABITANTS IN NEBRASKA.

SENATE BILL NO. 126, now up for consideration in Nebraska, provides that in cities having between 5,000 and 25,000 inhabitants franchises may be granted to telephone companies only when favored by a majority of electors, as shown by a vote cast at a general or special election, upon a proposition duly submitted by the city council.

OFFICIAL BULLETIN NUMBER SEVEN OF THE INTERNATIONAL INDEPENDENT TELEPHONE ASSOCIATION OF AMERICA.

SECOND SERIES.

Executive Committee met in the office of the president, Cleveland, Ohio, January 7th.

Ways and means were considered for extending the association work, and carrying it on more vigorously along broader lines, as explained in the report of this meeting published recently.

Under the resolution which was at this meeting adopted to provide for honorary membership, to which officers of Independent companies and association, and other individuals interested in the Independent field would be eligible, quite a number have already been enrolled as members and additional subscriptions are being sent in daily for consideration. Everyone in the field eligible is urged to take advantage of this honorary membership. Full details, including privileges extended to honorary members, will be furnished upon request.

The committee also authorized the publication of an official bulletin, first number to be issued not later than April 1st. This will contain the names of honorary members and all contributors to the association, with a great deal of information of value to the Independent interests. It will be published monthly under the title of "The Shield Chronicle." Subscriptions will be 25 cents per year.

After considering the names of all cities desirous of entertaining the next convention, Chicago was selected as being the most suitable site. June 4th, 5th and 6th were fixed as the dates for the convention; the advisory board meeting to be held on the 3d.

At the informal meeting in Chicago on the 16th and at a joint meeting between representatives of the association and those of manufacturing and kindred interests, held in Chicago, January 22d, plans were perfected for securing the co-operation of all interested in the Independent field, in obtaining funds for the association upon an equitable basis.

Reports presented at the three meetings above mentioned indicate that the present condition of the Independent movement is very satisfactory, and the prospects of the future are very encouraging. The important thing is for the Independents to continue working together, the aim of each company and individual being the greater good of the entire movement. Active, hearty co-operation is essential to the achievement of our greatest possibilities.

STATE MEETING.

The granting of an Independent franchise at Milwaukee has had a wonderfully stimulating effect on the Independents of Wisconsin, and the state meeting held on the 16th and 17th of January at Madison was the best in the history of their association.

The South Dakota association had a splendid meeting on the 10th and 11th. The incorporation of the word "Independent" in their association title indicates that its policy will be more strictly Independent than in the past.

The Vermont and New Hampshire association held an arousing convention on January 8th, at Bradford, Vermont. The Independents in the Northeast are making wonderful strides. Their success in obtaining franchises at Boston and other progressive places, and the recent favorable publicity given the movement in the Boston and New England papers generally, has been of great benefit in strengthening the position of the Independents throughout that section.

Advanced reports from the Nebraska state meeting, at present (January 23) in session at Lincoln, are that it is the best they have ever had. The report of the state officers is that the Independents in Nebraska are in a very flourishing condition.

Annual conventions are planned for a number of states for the next month. An Independent company could not make a more profitable investment than by sending as many representatives as possible to its state or neighboring state's convention. To obtain the benefit of co-operation, it is necessary to take an active interest in the affairs of your organizations.

CONVENTION DELEGATES.

The state associations who are holding annual meetings, should not forget to elect their delegates to the international convention.

STATISTICAL DEPARTMENT.

The association is still gathering map data. Don't overlook or underestimate the value of this work, and if you have not already done so, please *send us that map of your lines at once.* We are going to keep asking for it until we get it. You can reduce the expense of this work, and hurry it along by doing your part promptly. Hadn't you better mail that map to-day before you forget it?

"LOOK FOR THE SHIELD."

Orders for "Shield" supplies during the last month included companies in the extreme Northeast, Northwest and Southern states. This will give you some idea of the extensive use of the "Shield" by the Independents. The "Shield" means a great deal to the Independent people as their official emblem, and is the best advertising medium that could be selected. No Independent exchange or pay station can be considered complete until equipped with standard toll signs. This form of advertising pays good dividends and keeps the public informed that your plant is part of the great Independent movement, the extent of which is being made known through the widespread use of the "Shield."

The supply department is at your service whenever you want "Shield" supplies. Lowest prices consistent with best goods obtainable. Illustrated catalog and samples sent upon request. Better order those *toll signs* while you think of it.

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IN THE OPERATING FIELD

GROWTH OF INDEPENDENT TELEPHONE COMPANY IN LANCASTER COUNTY, PA.

THE Columbia Telephone Company was the first Independent company to give service in Lancaster County, and was one of the earliest Independent companies to be started in the state of Pennsylvania. It commenced business at the beginning of the year 1897, with only 42 subscribers, who were all located in the town of Columbia. It had at that time an authorized capital stock of $5,000, with only $2,500 of that amount subscribed, and of this amount only $600 was cash on hand when business started. Under the management of Harry C. Young, who organized the company, and has since its incorporation been president and general manager, its business has grown substantially, and recently with increasing rapidity. The capital stock has been increased to $75,000, and 6 per cent dividends are said to have been paid from the very first. At the present time the system has 700 subscribers, to the number of which additions are being constantly made.

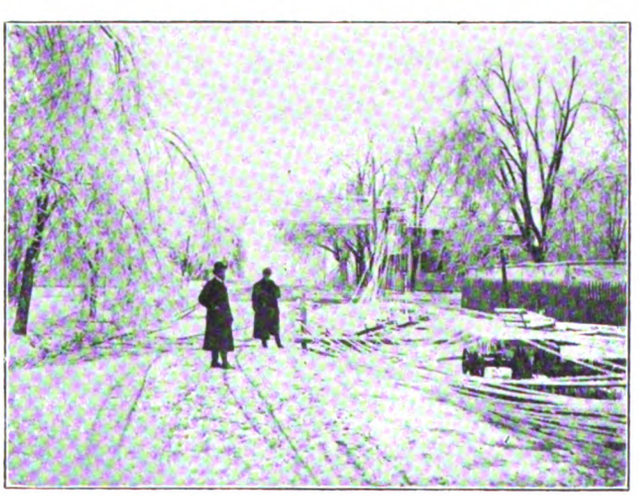
SUMMARY CUTTING OF CONNECTIONS BY THE BELL COMPANY AT OWENSBORO, KY., AROUSES INDIGNATION.

BY a shrewd deal the Cumberland Telephone and Telegraph Company acquired control of the rural lines in the vicinity of Owensboro, Ky., which had been connected with the Independent telephone company at that place. Not content with

THE SLEET AND SNOW DAMAGE STORY CONTEST

THE photograph from which the illustration on this page was made shows an incident upon which might be based an article that would win the $20 prize offered by THE AMERICAN TELEPHONE JOURNAL. It is believed that the articles submitted in competition for this prize will be so interesting that it is desired that every telephone man who has an opportunity shall take part in it. In order that no telephone men, through having recently subscribed for this paper, or for any other reason, may be shut out of this contest through lack of knowledge, the conditions which govern it are here repeated in full.

To show how the danger of losses from sleet and storms may be diminished by proper original construction of telephone lines, THE AMERICAN TELEPHONE JOURNAL offers a group of prizes for the best three articles on the subject presented before the first of next April. These articles must describe the effects of an actual accident, resulting from the loading of wire, cables or fixtures with sleet or snow.



View of Fallen Telephone Lines, Loaded with Ice. Illustration Reproduced from Everbest Magazine by Courtesy of Ewing-Merkle Electric Company.

Each article must be accompanied by one or more photographs of the sleet-covered equipment, taken during the present winter, immediately after its fall. Articles must describe fully the nature of the load on supports, telling why they failed. The form of construction which the author believes would probably have been most effective in preventing the loss, with reasons for his belief, must be described. Particulars as to the effect on service, such as number of lines out, length of time interrupted, number of complaints, any advantages gained by competitors not subject to such interruption at the same time, and losses due to rebates to subscribers whose lines were put out of service, should, if possible, be included, in order to give sufficient information to enable readers to form an approximate idea of the actual cost of damage, from the broadest point of view. The actual cost of material and labor for making repairs would of course be desirable.

Articles must not exceed 2,000 words in length. Awards of $20, $15 and $10 will be made for the first, second and third prizes, respectively. Payment for any other articles received will be made at regular rates if accepted for publication, so that the time expended by any contributor of good material will bring him due compensation. THE AMERICAN TELEPHONE JOURNAL reserves the right to refrain from considering the author of any article as a candidate for a prize if the material submitted cannot be developed into a form acceptable for publication. Each article must deal with a single case of line failure. Any person may contribute as many separate articles as he wishes, provided they deal with separate subjects. Awards will be made as soon as possible after April 1. Judgment will be based on the merits of photographs and articles from a strictly practical standpoint, on the value of the facts they present, and not on the mere wording of the articles. No discrimination against an article on account of lack of literary style will be made.

This competition is open freely to all who may desire to compete, without charge or consideration of any kind, and prospective contestants need not be subscribers of this publication in order to be entitled to compete for the prizes offered.

There are reasons why the illustration published herewith does not fully conform to the requirements which will be likely to be met by the winner of the prize, although taken by itself it shows that it was made from an exceptionally interesting photograph. For the benefit of those who wish to obtain hints which will be useful to them when the storm calls for quick work with the camera, these reasons have been written out, and will be sent to every interested person who mails a request for them to THE EDITOR, AMERICAN TELEPHONE JOURNAL, 100 WILLIAM STREET, NEW YORK CITY. Write to-day and get these suggestions. *They may help you land that twenty.*

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its success in a business transaction, the company felt obliged to celebrate. The interesting manner in which it indulged its joyous spirit was to cut connections between the country lines and the city exchange during the night, without giving notice to subscribers on either set of lines. The confusion during the next morning may be imagined, and naturally the subscribers to the rural lines are all anxious to go back to the Independent connection.

INVESTIGATION OF TELEPHONE SERVICE IN THE DISTRICT OF COLUMBIA TO BE CONSIDERED.

IN the House of Representatives there has been introduced a resolution providing for an investigation into the rates charged for telephone service, and the efficiency of the service in the District of Columbia. The Committee on the District of Columbia named as the body to conduct such an investigation, is to be fully empowered to send for persons and papers, to compel the attendance of witnesses, and to take such other steps as may be necessary for a full and reliable investigation.

REDUCED RAILWAY FARES TO SIOUX CITY FOR IOWA CONVENTION.

A SPECIAL rate of one and one-fifth times the regular one way fare for the round trip to Sioux City for the Iowa Convention, from any point west of Chicago, has been granted through the efforts of the Iowa Independent Telephone Association. This convention, which is to be held on March 19th, 20th and 21, is expected to be by far the most important and interesting convention which this association has ever held. The program committee has set to work upon its arrangements, and practically completed them at a very early date with exceptionally interesting results, as may be seen from an examination of the list of speakers and topics.

An especially valuable feature of the meeting will be the presentation of a lecture showing the present state of development in many sections of the country. Operating companies which have attractive buildings are co-operating with the association by sending photographs, in accordance with the plan announced by THE AMERICAN TELEPHONE JOURNAL in the issue of February 2nd. All companies which have not yet taken advantage of this opportunity should do so at once, in order that the necessary slides may be prepared. This plan has received the hearty endorsement of President Hoge, of the International Association, and there is no doubt that it will be, in connection with the other exceptionally valuable features of this meeting, a means of attracting many prominent men from outside of the state.

Every prominent telephone man in Iowa is expected to be present, and an exceptional number of the smaller telephone companies intend to send representatives. Telephone men are urged to make their plans for attending this convention at once. Any information desired can be obtained from the chairman of the program committee, C. H. Smith, care the Independent Telephone Clearing House, Des Moines, Ia., by writing to him.

Program of the eleventh annual convention of the Iowa Independent Telephone Association, Sioux City, Iowa, Tuesday, Wednesday and Thursday, March the 19th, 20th and 21st, 1907.

The program which has been prepared is as follows:

TUESDAY, MARCH 19, 1907.

2:00 P. M. Organization and appointment of committee on credentials, president's address, reports of officers and committees.

4.30 P. M. "Is it advisable to appoint a State Toll Line Inspector?" F. McNally, Carroll, Iowa.

5.00 P. M. The necessary standardization of clearing house toll lines and equipment," W. J. Stanton, Waterloo, Iowa.

EVENING. Given to examination of exhibits.

WEDNESDAY, MARCH 20, 1907.

9:15 A. M. Address of Welcome, W. G. Sears, Mayor of Sioux City, Ia.

"OUR NEIGHBORS."

9:30 A. M. Minnesota.

9:45 A. M. South Dakota, Judge C. B. Kennedy, Canton, S. D., President of The Independent Telephone Association of South Dakota.

10:00 A. M. Nebraska, R. E. Mattison, Lincoln, Neb., Secretary of the Nebraska Independent Telephone Association and Manager of The Telephone Traffic Association of Nebraska.

10:15 A. M. "Ourselves." Report of State Agent for past year, G. A. Hollis, Hudson, Iowa.

11:30 A. M. "The Work of the International Independent Telephone Association," James B. Hoge, Cleveland, Ohio.

12:00 M. Noon adjournment.

2:00 P. M. Afternoon to be used by representatives of Farmers' and Mutual Companies.

3:30 P. M. "Economy of Construction, Labor, Equipment and Management," W. D. Dunsmore, Oskaloosa, Ia., Vice President and Manager of the Oskaloosa Home Telephone Company.

EVENING.

8:30 P. M. Stereopticon Lecture.

THURSDAY, MARCH 21, 1907.

9:30 A. M. Clearing House report of the past year and prospects for the future, Geo. T. Hewes, Des Moines, Ia., Manager of Iowa Clearing House.

10:30 A. M. Independent "Long Distance," E. E. England, Mount Pleasant, Ia.

11:30 A. M. "Hints on Management of Traffic," Roy Walker, Des Moines, Ia., Manager of Mutual Telephone Company.

12:00 M. Noon adjournment.

2:00 P. M. New business and election of officers.

2:30 P. M. Choosing place for next meeting for coming year.

3:00 P. M. "Conservative Financing," A. T. Averill, Cedar Rapids, Ia., President of the Corn Belt Telephone Company.

EVENING—BANQUET.

Cornell University to Use Independent Service Only.

ANNOUNCEMENT has been made by President J. G. Schurman, of Cornell University, Ithaca, N. Y., that a ten-year contract for Independent telephone service is to be executed with the Ithaca Telephone Company. This marks a most satisfactory step in the advancement of the Independent company at this place to a predominant position. The new contract for the University provides for the immediate installation of one hundred and thirty-four telephones, with the right to increase the number to two hundred. This provides a much more comprehensive system than is in use at present, as the University is now using thirty-four telephones connected to the lines of each company. Under the new plan the departments will be connected to a private branch exchange switchboard, with lines to the central office of the Independent company. All construction will be underground.

Its success in this important contract serves to call attention to the extremely rapid development of the Independent company at Ithaca during the past year, owing largely to the efficient efforts of District Manager R. B. Fegan. From eleven hundred and fifty subscribers in the city and county, the number connected to the exchange of the Ithaca Telephone Company has within a year increased to about thirty-six hundred. Preparation for additional growth has recently been made by the placing of between four and five miles of aerial and underground cable, with a capacity for taking care of five thousand new subscribers.

An interesting item of news in connection with the granting of this contract is that members of the executive board of the University, who are all residents of Ithaca, preferred that the decision in regard to the telephone contract should be given by the out-of-town trustees. They therefore allowed the matter to be handled by a committee of trustees in New York City, who, after an impartial investigation, decided that the Independent company was able to give the most advantageous arrangement.

The Cornell contract has been under discussion for some time, and the Bell people had openly boasted that they would secure it. Its award to the Independent company is therefore a most distinct setback to the Bell interests.

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THE EDITOR'S PAGE

DOES THE BELL COMPANY ADMIT INFERIORITY OF ITS INSTRUMENTS?

FOR some time past many Independent manufacturers of transmitters and receivers have urged that their product is in many respects better than that turned out in the Bell factory. As might be expected, these claims have been vigorously opposed by the Bell manufacturers and operating companies alike, who have repeatedly stated that their appliances are the best made in the world.

An interesting side light is thrown on this important matter by a statement which is authentically reported to have been made at Providence, R. I., by the attorney of the local Bell company, while opposing the attempt of the Independent company to gain a franchise. This public statement was to the effect that although it is true that the local Bell company is compelled to use the instruments furnished by the parent organization this fact really works out to the advantage of the local concern. *"If the Providence Telephone Company* (Bell) *owned its own instruments the additional expense would be enormous and a depreciation fund would have to be established in order to meet the expense of instruments being subjected to usage."*

Any practical telephone man is aware that if his transmitters and receivers will not stand up under service conditions the principal expense for maintenance will not be that for factory repairs, but the cost of repeated visits of a trouble man before the difficulty is located, added to the expense of removal and replacement of the defective instruments. If the burden upon the Bell factory is "enormous" what must be the strain upon the resources of the Bell operating companies, due to the increase of their maintenance accounts? How does the use of this kind of apparatus affect the profits of a sub-licensee company, forced by its contract to accept it and put it in service? How does the use of such apparatus affect the efficiency of the Bell and sub-licensee service, given with such a handicap? Is the reason why Bell instruments are worked off on sub-licensees clear at last? Has the astute gentleman from Providence let the cat out of the bag?

PHOTOGRAPHY AND FALSE MODESTY.

THAT a great many telephone men take photographs of telephonic subjects which are interesting and pleasing to look at we know, because we very often see good examples of this class of work. That the men who take these photographs appreciate the fact that their work is valuable to others is by no means as sure. Of course a photograph of some piece of telephone work must have a certain number of definite qualities to be of interest to a telephone man. It is necessary that it should do more than excite some such comment as "That's a pretty picture, with a telephone pole in it," leaving him to pass on to the next. There must be something about that pole that would hold a telephone man's attention, if he were on the ground and saw it standing under its load of wires, or the picture will be not worth the taking. But let there be some one such quality, and it does not matter much what it is. The pole may be remarkably straight, or wonderfully crooked, or bent by the stress of the weight it carries to a degree which would seem to make it impossible for it to stand entire; it may even be broken. Even outside the thing itself there may be some feature which will attract and hold for a time the observer's attention. There may be some element of novelty in its location, something extraordinary in its environment. After all, the novelty is the thing. It is always the new object that most quickly draws our attention. Getting back to the personal application, it seems that where the average man fails to see the possibilities of using photography for the benefit of others is that he does not understand the true significance of this element of novelty in objects. It passes from him quickly, sometimes even before he has learned wherein it lies. It is a pretty good thing to not let these novelties pass away uselessly. There are a great many people who enjoy them hugely, and cannot be satisfied. One that is lost is a real deprivation to such keen minded persons. Whenever a telephone man sees something new to him he can do no better service to his friends in the business than to catch its image with his camera, and pass it along.

Of the telephone men who are interested in this subject of photography there are a very large number who are rather inclined to frown on their own work. Another man's eyes are to them an unknown quantity. While they know their work looks good to themselves they are too much afraid that weak spots will be found if it is shown. Perhaps there will be a few shown up, in that event, but the worst that is possible is a criticism that may lead to future improvement. After all, that is more to be sought than avoided. And it is a poor kind of a fellow who is unwilling to pass a good thing along because, in spite of the fact that it will give pleasure, one or two flaws may be apparent. The desire to show only that which is perfect springs from a rather cowardly sort of pride; also, it has been the means of keeping many a good bright light closely hidden.

This subject of photography of things having a bearing on telephone work is one in which THE AMERICAN TELEPHONE JOURNAL takes a very hearty concern. It believes that the camera should be used far more than it is now for the purpose of making records which will save time and money to operating and manufacturing companies. In the training of new employees to accomplish things in a neat and workmanlike way it also has a large field. THE AMERICAN TELEPHONE JOURNAL publishes every year a great many photographs having a bearing on this line of thought, and would like to publish more if it could obtain the right kind—the kind that in themselves tell a story of something new or something worth knowing. It would be glad to have every telephone man in the country who has ever taken a picture that looked good to him when it was first made send to this office a print. If this were done the number that would be found worth publishing—and, incidentally, worth paying for, too—would probably surprise both the takers and the editor; and wouldn't they please the subscribers!

HEEDING THE JUDGMENT OF PARIS.

IN the principal city of France, long noted as having the worst telephone service of any large civilized community in the world, there are at last signs of progress. A new director of the government department having control of the telephone system has been appointed. The numerous and urgent complaints of the residents of the city are being given attention Not only is an investigation of the faults of the present service being carried on, but it is said that consideration is being given to the matter of putting the whole plant into a condition which will make it conform to the best ideas of modern telephone practice.

If this movement is genuine the next news from it is likely to be that the new director is investigating the model telephone systems in some of our American cities.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

AMOUNT OF DAMAGES AN ABUTTING OWNER MAY RECOVER.

How much damages can a man that owns a lot along the street where we are building our line recover? A very obstreporous old German asks five hundred dollars before he will permit us to put up our poles past his property. All there will be in front of his lot is one telephone pole, and we do not see how this can in any way damage him to the extent he claims. The total value of his property is not over two thousand dollars. S. B. C.

IF there has been no wanton or malicious motive in the location of your pole, or disregard of the rights of the abutting lot owner, your German friend would only be entitled to nominal damages. This would be the difference in the value of his property before the construction of the line and its value afterwards if the depreciation in value has been caused by the erection of the poles. We do not see how the erection of a telephone pole in front of a lot could make a difference of twenty-five per cent. in its value. It would seem that $25 ought to cover all the damages done to the property unless there are some special facts of which we have not been informed. By this we do not mean that $25 would be merely the nominal damages., We think it would be giving him a good deal more than he is entitled to, but some allowances may always be made to appease the wrath of those who are apt to make trouble. The danger of paying one lot owner is of course that you may thereby be compelled to make payment to many others.

ENFORCING CONTRACT FOR RATES.

We notice that you have several times in the columns of THE AMERICAN TELEPHONE JOURNAL stated that a contract between a municipality and a telephone company fixing the rates at which the company should give service was without consideration and could not be enforced by the municipal authorities in the courts. Would this principle hold true in a case where we solicited the contract and obtained considerable advantage in our use of the streets, by agreeing with the city to give a certain fixed low rate? The city authorities say that the contract was beneficial to us and inconvenient to the public, and we should thereby be held to the rates fixed in the franchise. F. M. E.

WHERE a franchise fixing rates is a contract without consideration it is so because of a lack of authority on the part of the municipality to determine rates. This lack of authority is fundamental and cannot be supplied by the fact that the city, in ignorance of its authority, granted the company a more advantageous franchise than it would otherwise have done. The lack of authority makes the rate feature of the franchise void from the beginning, and the contract cannot be enforced under any circumstances. This is not true for all States, but is the law of Ohio, where we understand the above question arises.

WHEN IS A CORPORATION DOING BUSINESS?

THE statutes of Missouri (Rev. St. 1899, Sec. 1024, 1025) provide that a foreign corporation, before it shall be authorized or permitted to transact business in the State, shall maintain an office, file a copy of its charter, etc. This section also fixes a penalty for any such corporation doing business without such requirements and denies it the right to sue in the state courts upon any demand, whether arising out of contract or tort. A corporation known as the Hanamo Telegraph and Telephone Company was incorporated in the State of Delaware. A board of directors in Missouri authorized the company's president to sell certain portions of its capital stock, and he sold certain shares of the stock and received a promissory note in payment for them. This note he sold to a bank and the bank brought suit to collect it. The defense in the suit was the statute first quoted as the court held that the contract of a foreign corporation doing a forbidden business was void. The court did not apply the statute to the case in question however, because it held that the "doing business" referred to by the statute is a transaction of the business for which the company was incorporated and did not include the sale of its shares by the telephone company so as to render the note void. Judgment in favor of the bank was sustained. First National Bank vs. Leeper, 97 S.W., 636.

INJURIES TO CHILDREN PLAYING IN THE STREET.

A JUDGMENT against the Michigan State Telephone Company for damages for injuries to a seven-year-old child who was hurt while playing in the street where the company was erecting its line, has been affirmed by the Supreme Court of the State of Michigan. The injury happened in the City of Grand Rapids. A little boy was playing in front of his father's house with other children. While so engaged a wagon of the telephone company, with a number of employees, drove up. The men proceeded to unload and throw upon the ground reels, ropes, snatch blocks and other equipment, preparing to string a cable on poles. The children at once began to roll the reel upon which the lead-rope was wound. While so doing, one of the company's workmen told them to keep away. A snatch-block was then attached to an anchor-post in the street and a rope was run through the block to draw the cable to the cross arms of the poles. The children continued to play about the anchor-post, which was left unguarded, and the little boy took hold of the rope which was passing into the snatch-block, and his hand was drawn in with the rope and crushed. The company's defense was that it was not negligent; that the boy was guilty of contributory negligence and was a trespasser. The court held that the boy was not a trespasser in the sense that he set in motion the agency which caused his injury. The question whether the company's workmen were negligent in leaving the snatch-block unguarded and not giving the children proper warning of the danger of playing with the rope, was held to be for the jury. It was also for the jury to determine whether the boy was capable of sufficient understanding to render him guilty of contributory negligence. The case was hotly contested in the Supreme Court, and resulted in two of the jurors dissenting from the opinion of the majority.

O'Leary vs. Michigan State Telephone Co., 13 D. L. N. 752.

ATTEMPT TO OUST CUMBERLAND COMPANY FROM MISSISSIPPI.

QUO WARRANTO proceedings have been begun at Laurel, Miss., to oust the Cumberland Telephone & Telegraph Company from the State. This action follows an alleged overcharge of rates authorized by the Mississippi Railroad Commission. The company has been charging subscribers in Laurel at the rate of $3 per month for direct business lines and $2 per month for direct residence lines. It claimed that this is 25 cents and 35 cents per month, respectively, in excess of the maximum permitted by the State Railroad Commission. It is estimated that the telephone company has collected not less than $1,000 in tolls said to be unauthorized.

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QUERIES

KICK COIL TELEPHONE.—(820.)

THE following letter from the general superintendent of a telephone company in New York State brings out some new points in the discussion of kick coil telephones which was started in response to a recent inquiry from a subscriber:

"I note the vigorous 'kick' your correspondent makes on the kick coil telephone, and that he has failed to mention one of the greatest disadvantages in the use of this apparatus. While the kick coil telephone will work very satisfactorily when the batteries are new, it is decidedly defective after the user has talked for five minutes or more, and then tries to get central again. During this time the internal resistance of the batteries will have increased so much that enough current can not be obtained to charge the coil sufficient to throw the drop shutter at central.

"Then again, the high voltage of the current makes the kick coil telephone impractical for party lines, particularly farmer lines where several instruments are installed, as the current from the coil is absorbed by the ringers nearest the coil, while the drop gets very little, usually not sufficient to throw the shutter.

C. D. W., N. Y."

PULSATING OR ALTERNATING CURRENTS IN A TELEPHONE LINE.—(821.)

Perhaps you can help me in an argument through the queries column of your valuable journal. I say voice currents on a telephone line are alternating currents. My friend says they are pulsating. Can you tell me which kind and why? Are not all induced currents alternating?

R. P. H., Conn.

YOU win, the currents emanating from the secondary of an induction coil and traversing the telephone line are alternating currents. Further all induced voice currents are of an alternating nature.

In order to appreciate the reason for this it will be necessary to first consider the truth in relation to magnetism, i. e., that when a conductor is moved across a magnetic field so as to cut lines of force an E. M. F. is generated in the conductor, which is proportional to the rate at which the lines of force are cut. The motion between the conductor and the lines of force is relative and the rate of the cutting depends upon three things: the intensity of the field, the velocity of the motion and the direction in which the cutting occurs.

Further, when a current of electricity is traversing a conductor lines of force encircle the conductor having a definite direction in relation to the direction of the current. Their magnitude is dependent upon the strength of the current flowing through the conductor.

We will assume that in figure 821 *a* represents a conductor bearing a current of five amperes, and *b* a conductor carrying a current of ten amperes. We have represented the lines of force surrounding each wire by the light lines around the conductor, indicating their direction by the arrows.

As to the increase in magnitude of the field included by the lines of force, as the current is gradually increased from five amperes to ten amperes we will liken their transition to the wave rings seen when a pebble is thrown into a pool of water. However, when the increase of current ceases, the building up of the lines of force likewise stops. So the lines of force remain stationary so long as the current remains constant.

We will now suppose the current in the conductor *b* to be lowered from ten amperes back to zero and imagine the lines of force to retreat to the wire and there disappear.

We will now place another conductor in juxtaposition to the first and note the phenomenon that will occur. This arrangement we have depicted in diagram *c*. The first conductor we will call the primary and the other the secondary. Then as we increase the current in the primary, lines of force will be thrown out and cut across the secondary. Having in this case a relative motion between the lines of force and the secondary circuit, you will note that a current is generated in the secondary, the direction being opposite to that of the primary. This is described as an induced current, the process being called induction.

As before stated, induction takes place only so long as lines of force are being cut or as long as there is a constant change in the strength of the primary current. As soon as the current in the primary reaches its maximum and remains at that value then the lines of force assume a definite position, become stationary and no longer cut across the secondary. The E. M. F. in the secondary then becomes zero and so remains until the strength of the primary current is changed.

We now decrease the current in the primary from its maximum to zero, and we have lines of force again cutting across the secondary, as shown in diagram *d*. You will note that the lines now cut across the secondary in a direction opposite to the previous illustration, establishing an E. M. F. in the same direction as in the primary.

This shows us that the effect of the current in secondary in the first case is to resist the piling up of the lines of force and in the second tends to keep up the primary current.

Inasmuch as the changes in value of the primary current of an induction coil in connection with a telephone are so very rapid you will readily see that the result in the secondary would be a rapidly alternating indirection.

As to the manner in which the low voltage of the battery is transformed to higher potential in the coil, that is another story which we would be pleased to tell you here could we but find the room. However, you will find it ably handled in any standard work on telephony.

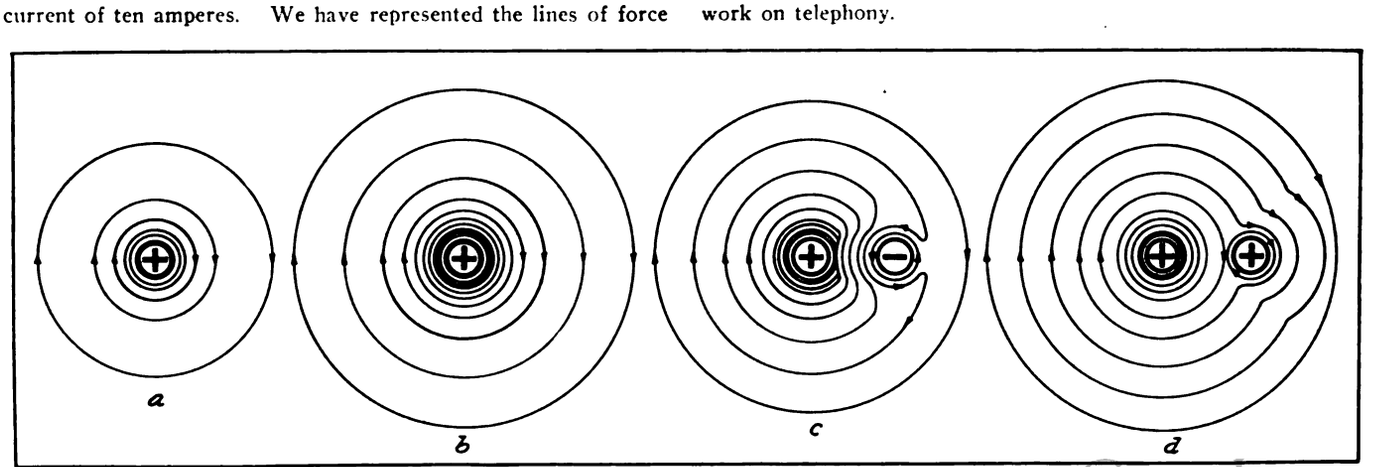

Fig. 821.

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Training Young Telephone Men

WRITING of the course of training which he thinks best adapted to fit a young man for successful work in his department, William Allan, chief electrician of the exchange at Glasgow, Scotland, offers in the *National Telephone Journal* some suggestions of which the following may be interesting to many people on this side of the water:

The first essential is that only the right class of young men be accepted for training in the department. It may be admitted that it is extremely difficult to know how the youth fresh from school will turn out; but it is the youth whose mind has shown a bent towards mathematics and mechanics who will most likely best repay time and trouble spent in training for telephone work. It must always be borne in mind also that although the sound mind, and the right kind of mind, is an important consideration, the sound body is also of consequence; a lad of weak constitution is certainly not the one who should be started on a career as a telephone electrician. In addition to a searching inquiry as to character and early training, there should be an entrance examination specially designed to test the progress already made, more particularly in mathematics, and unless he is found capable of answering, with an efficiency of say 90 per cent. some simple questions in arithmetic and algebra (as far as simple equations) he should be disqualified. A satisfactory school certificate might be accepted as sufficient proof of general education. No one under sixteen years of age should be accepted under any circumstances.

When candidates have been accepted they should be placed under the control of a special officer, whose duty it would be to watch the career of these young men in all sections through which they pass, and from time to time to test by special examination the progress they have made; he should also direct their studies in technical classes. Although examinations are apt to become more or less stereotyped and hardly show the full capabilities of any candidate, still they may be made to give sufficient indication (along with other sources of information available) to enable one to judge whether a lad is likely to be worth further expense in his special training.

The special training officer should have a properly equipped workshop assigned to him, in which the boys would be under his control during the first six months of their training. There they should have a thorough drilling in the best methods of handling tools, and they should be shown how to take all classes of apparatus to pieces, the practical use of each part being explained. It might be possible to get a little remunerative work done by them during their term in this shop by letting them handle recovered apparatus and take it apart for the purpose of demonstration; then before re-assembling it let them clean up the several parts, so that the apparatus could be re-erected when required without further labor being expended on it; it should be made quite clear, however, that the matter of first importance throughout the time of training is not so much to get remunerative work done by the learners and save some other classes of labor, but to see that they are thoroughly instructed in the proper use and handling of apparatus and tools. While the lads are in the training officer's workshop he will be reasonably able to say at the end of six months whether any of them should no longer be retained in the service, as he will have had an excellent opportunity of becoming thoroughly acquainted with their qualities.

At the end of six months the boys should be placed under an an experienced instrument setter (specially chosen for his personal character and efficiency) and sent round with him to gain an insight into the proper methods of setting instruments, giving such assistance as they are able. At the end of three months the training officer would put them through a practical test of this section of the work, certifying whether satisfactory knowledge had been gained, or if longer time should from any special cause be given to this section.

The lads would then be passed on to the switchroom, where for six months they would be placed under a first-rate construction man (again specially chosen, as in the case of the instrument setter). Here they would have an opportunity of watching the methods of erecting and wiring switchboards, testboards and power plant, doing little practically themselves, but rather seeing how the work is done; then during another six months they should be set to the actual handling of cables and erecting of apparatus, care being taken to see that they gain skill in following the connections from diagrams. As switchboard apparatus and wiring are so much more complicated than any other part of the plant, the full twelve months will probably be the very shortest time advisable to allow on this section. When this time has expired their knowledge will again be tested by the training officer, who will certify the progress made and the necessary action to be taken in case it should prove unsatisfactory. Assuming that the progress to this point is found satisfactory, the lads should then be sent back to the switchroom for another six months and set to the clearance of switchboard faults, their nature, probable cause, and the best method of localizing and clearing them being carefully explained to them by whoever is in charge. From this duty they should pass to the testroom where they will be initiated into the ordinary routine work of testing, the use of instruments for making insulation and other tests, and the keeping of records and checking the work of inspectors and troublemen. At this point they would come more specially in contact with subscribers, and care must be taken to instil into their minds a proper idea of the line of conduct in speech and manner, which it is expected representatives of the company should follow in their dealings with the company's clients. After three months thus spent, they should have six months on instrument faults; here they will, for the first time, be left more or less to their own resources, and at this time instructions should be very carefully given in all that pertains to the relationship between the company's employees and the telephone users. A comprehensive test of all-round knowledge and capabilities of the apprentices should then be made by the training officer, and it would be his duty to report whether the young men were now fully qualified for entry on the permanent staff of the electrical department.

Throughout all these stages, if the training officer should certify that at the end of the specified period proper and reasonable progress had not been made, it should be clearly understood by the apprentices that they must lose any increase in pay which might apply at the end of such period, remaining at the lower rate until able to qualify for passing to the next stage.

The course of practical training suggested may be summarized as follows:

In the workshop	6 months.
With experienced instrument setter	3 "
In the switchroom	18 "
In the testroom	3 "
On instrument faults	6 "
Total	3 years.

In addition to the practical training, the apprentices would be required to attend such suitable classes as might be available, or to take correspondence courses of a suitable character to give them a knowledge of mathematics and electrical theory.

The success of any such scheme as has been outlined must depend, first, on the care taken in passing candidates to make sure of obtaining the proper type of lad; second, on the choice of the proper man for the position of training officer; and third, on the choice of the best men available, in each section of the work, under whose control the lads will be placed at the successive stages. In each of these cases the warning to "choose well, your choice is brief yet endless" should be well heeded.

In the satisfactory working out of the scheme the training officer would have the most influence, as he would come in touch with the lads at the end of each term when examining them on the progress made, and it would be well that he should

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also, while the classes are in session, supervise their studies by meeting them at least one evening in each week, when any special points requiring explanation might be brought up and difficulties cleared away. The young men are at an age when example has more to do in moulding their characters than any amount of precept. The instilling of knowledge into their minds will be best done by offering it in such a way as will make them eager for more, rather than by endeavoring to force dry hard facts, as it were, down their throats without any attempt to make the dose palatable by offering it in such fascinating guise that their attention will always be held. This may be done where the instructor is himself interested in his work, and has sufficient enthusiasm for it as to make all he says and does both interesting and instructive.

ROONEY VS. GREEK.

IN the early fall last year a number of Western Reserve University students at Cleveland rented and equipped a house near their college and after christening the new abode, as is customary, with certain letters of the Greek alphabet, they decided to have a telephone installed.

A few days following Line Foreman Rooney received an order which read as follows: "Alpha Delta Phi, 153 Cornell street." He accordingly reported by telephone to the construction clerk, saying:

"I'm going on that Alfred Pic house nixt."

"All right," replied the clerk, laughing. "Call in when the line is completed."

A few hours later Rooney again called:

"I've finished that Cornell street order an', Oi say, phwat do ye think, that's a place phere the college byes stop at."

"Yes, of course," answered the clerk. "What did you suppose it was?"

"Begorry," replied Rooney, "I was after thinking it were a Chinase laundry!"

PLEASANT ENTERTAINMENTS BY TELEPHONE EMPLOYEES IN CINCINNATI AND NEW HAVEN.

EMPLOYEES of the telephone companies in Cincinnati and New Haven are the latest contributors to the list of interesting entertainments by telephone people.

In Cincinnati an entertainment was given on January 30th, and repeated on the two following days, by the telephone company for its operators and other lady employees. A very interesting program was prepared, including several pleasing and amusing songs, a one-act play, etc. The most novel feature of the entertainment was a bag striking match between "Sis" and "Feathers," two operators who have developed their skill in this art in the rest rooms connected with the company's exchanges, which are all equipped with striking bags. The audience was greatly delighted by this unusual "stunt."

At New Haven the telephone employees, as a preliminary to dancing, gave an entertainment on January 25th, in which the more serious numbers were the songs by men connected with the company.

The second part consisted of "A Bunch of Musical Nonsense," entitled "Trouble in a Darktown Exchange." Inside the cover of the program, which was sent us by our correspondent, are written a few words indicating the opening of the entertainment as follows: Operator said "Hello, hello, hello, what number? Fouah, double one, double fouah! What you think this is, a policy shop? Dis am de Darktown Telephone Exchange."

TEXAS INDEPENDENTS TO MEET AT FORT WORTH.

THE Texas Independent Telephone Association will meet at the Exchange Building of the Fort Worth Telephone Company, February 21st and 22nd, the date of meeting having been changed from March 21st and 22nd on account of the proposed legislation by the State of Texas.

It is deemed advisable to take up each individual bill and discuss its objections or merits, and then appoint a committee to go to Austin and lay the matter before the legislative committee.

The most important bill now pending is "An Act to regulate telegraph and telephone companies after the manner of common carriers, requiring competing companies to receive and transmit messages to each other's line by the installation of joint service facilities between local and long distance points, and requiring companies to accept and transact business on the clearing house principle."

Another bill under consideration places a three per cent of gross receipts tax on telephone companies, while a third bill makes the limiting rate for residence telephones, in cities of over 30,000 people, $1.50 per month; a certain class of business telephones, such as lawyers, offices, etc., $3, and other classes of business, $5.

The third bill makes it unlawful to charge more in one place for service than in other towns of the same size.

The manufacturers and supply men represented in Texas will provide for the entertainment on the evening of February 21st.

BILL TO PLACE INDIANA COMPANIES UNDER RAILROAD COMMISSION.

A BILL has been prepared by a member-elect of the Indiana Legislature, for presentation to the next session, to make telephones common carriers, and place them under the jurisdiction of the Railroad Commission. Mr. Bowser, the member, states that telephone conditions in Northern Indiana have suggested to him the need of such legislation.

A CARD SYSTEM FOR NUMERICAL LISTS.

BY SCOTT B. WILLIAMS, AUDITOR, THE TEXARKANA TELEPHONE COMPANY.

NUMERICAL lists are kept for the purpose of enabling the manager to know at the close of any day just what numbers are vacant, and to give a record of each switchboard number which will furnish informatiton in a form for ready reference so that at any time one may know the name of each subscriber, street address, and date the telephone was installed on any number.

The writer has designed and is now using a card system for the numerical record. The card is printed as shown in Fig. 1. It is 3x5 inches in size and may be of any color. It is well however to have it of a different color from cards used for other records in order to prevent confusion. These cards are of course filed numerically in a regular cabinet card section, with guide cards used to separate them into groups of fifty units.

When a telephone is put in, after the order has been returned to the bookkeeper, as explained in a previous article published in AMERICAN TELEPHONE JOURNAL, issue of October 6, 1906, a numerical card is filled out and filed in its proper place. If the number is afterward discontinued the date is entered on the card in the space provided, and the card is then put in a transfer file arranged just like the working file. Disconnects and connects are shown on the card, and can be easily picked out of the file by putting a small strip of cardboard just in front of and a little above the card. After making the proper entries in the numerical list the order is marked O. K. with the initials of the clerk in the proper place and is afterward entered in the street list.

Telephone No.....
Name .....
Address .....
.....
Biz.—Res. .....
Date Installed...
Disconnected...
.....

Fig. 1. Form (red numeric

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TELEPHONE PATENTS

TESTING SYSTEM.

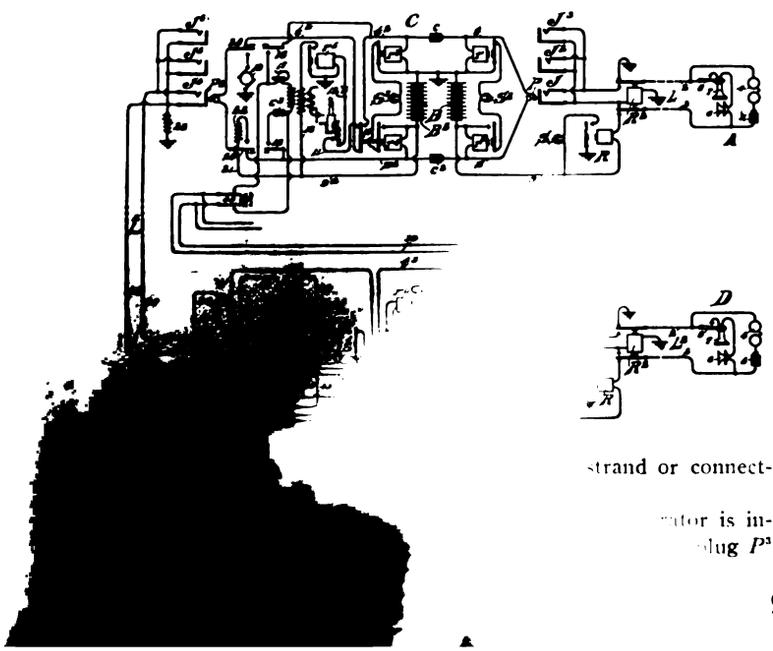
William W. Dean, Chicago, Ill., patents (No. 838,525; dated, Dec. 18, 1906; filed June 29, 1903; serial No. 163,616) and assigns to the Kellogg Switchboard & Supply Co., Chicago, Ill., a testing system.

This invention covers a method of connecting the common portion of a busy testing-circuit to the testing strand of an operator's cord at the time when it should be used for testing.

The illustration shows the system as applied to both a subscriber's and a trunk operator's cord circuits. In the upper cord circuit, for use by a subscriber's operator, tip strand t^2 of the cord circuit is normally open and its forward portion is connected by spring 10 of the supervisory relay r^4 with conductor 11, leading to a normally open contact of the plug-seat switch in which the calling plug P^2 normally rests. From this switch, conductor 12 extends to the high impedance test relay r^5, the opposite terminal of which is grounded. This relay controls, through its normally open contacts, a path for current from the battery B^2 over conductors 9*a* and 13, including the tertiary winding of the operator's induction coil.

In the trunk circuit shown at the bottom of the illustration, relay 9 is associated with the trunk. Spring 35 of this relay is connected with the forward portion of the strand t^3 of the trunk cord, and normally engages with a contact connected with conductor 36, leading to a plug-seat switch in which the trunk plug P^3 normally rests. This switch is connected by conductor 37 with one pole of test relay r^{11}.

In the operation of the system in connection with the subscriber's cord, the line is tested by means of the calling plug P^2. The current will flow from the test-ring of the wanted line, if the line is busy, over tip-strand t^2 of the cord-circuit tip-spring 10 of relay r^4, conductor 11, plug-seat switch contacts, which are now closed owing to the absence of the plug, and conductor 12 through the test relay r^5 to ground. The relay is operated and causes a click in the operator's telephone. Upon the insertion of plug P^2 supervisory relay r^4 is operated to cut out test relay r^5, and it is not again connected with the cord circuit during the connection. The operator's telephone may therefore be connected



strand or connect-

ator is in-

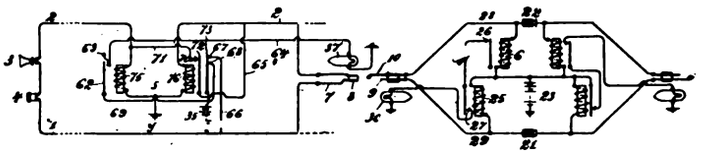
lug P^3

in the usual manner. Test relay r^{11} is connected with the strand t^3 through contacts of the plug seat switch. When the plug is in its seat, the test relay is isolated from the trunk cords. The insertion of plug P^3 closes the path for current from battery B^3 over the sleeve-strand of the cord circuit, thereby actuating the cut-off relay R of the line L^3. Relay r^9 is likewise operated, and serves to disconnect the conductor 36 of the test relay and to complete the tip strand t^3 for conversation.

It will be evident that in both cases the test relay, which is common to cords at an entire position, is disconnected and wholly isolated from the circuit except when a cord is being used for testing.

TELEPHONE SYSTEM.

Gottlieb Magnus Teodor Piltz, Stockholm, Sweden, patents (No. 838,809; dated, Dec. 18, 1906; filed August 4, 1903; serial No. 168,148) and assigns to Stockholms Allmänna Telefon Aktiebolag, Stockholm, Sweden, a telephone system.



This patent covers a telephone system comprising two relays, one of which, 75, is included between the subscriber's station and the central battery, and the other, 76, between the battery and the spring jack. Relay 75 is energized to control the line signal when the subscriber calls the exchange, and relay 76 is operated when a plug is inserted in the answering jack. One effect of the operation of this second relay is to join the two relays in parallel, in which condition they together serve as an inductive resistance in connection with one side of the line, as is necessary for the proper working of the system. The corresponding inductive resistance for the other side of the line is furnished by a supervisory relay in the cord circuit.

INTERRUPTER FOR ELECTROMAGNETS.

John Erickson, Chicago, Ill., patents (No. 841,004; dated January 8, 1907; filed February 3, 1906; serial No. 299,326) and assigns to the Automatic Electric Company, Chicago, Ill., an interrupter for electromagnets.

This invention covers an inerrupter of improved construction for enabling a rotary magnet of a telephone selector in an automatic exchange to interrupt its own energizing circuit, and to continue this action as long as the circuit remains closed at all other points, whereby the selector automatically continues in operation until it finds an idle line. The claims cover the construction of such a piece of apparatus.

GROUND ROD.

Charles Lanz, Knoxville, Pa., patents (No. 837,693, dated Dec. 4, 1906; filed Oct. 10, 1905; serial No. 282,159) a ground rod.

By a method described in this patent there is provided a ground rod having near its lower portion a permanently connected wire which may be attached above the surface of the earth to any suitable wire forming a part of a telephone circuit.

In forming this connection the inventor proposes to wind a length of wire around the rod near the end which is to be driven

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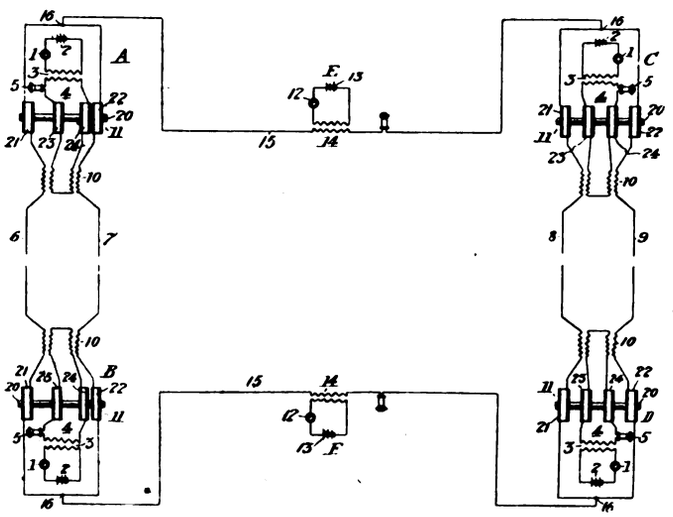
PATENTS—Continued.

into the earth, apply below this winding a cup-shaped disk, and then dip the whole into spelter. On withdrawing the rod in a vertical position, it and the wire coil will be thoroughly galvanized and also the spelter will have united the coiled wire to the rod in a manner which insures a proper electrical connection. The spelter forms a thick coating over the coil, thus forming a connection which cannot accidentally be torn loose.

PHANTOM SYSTEM.

Thomas P. Jordan, Dallas, Texas, patents (No. 838,028; dated December 11, 1906; filed October 3, 1904; serial No. 292,588) and assigns to E. H. Cary, Dallas, Texas, a phantom telephone system.

The object of this invention is to provide a means for pre-



venting cross talk between a phantom circuit and the main line circuits of which it is composed.

In the illustration, *A*, *B*, *C* and *D* designate four stations equipped with substation sets of the usual type. The main lines are designated by figures, 6-7 and 8-9, respectively. Induction coils 10 give facilities for the transmission of speech between the secondaries of the substation talking sets and the main line. In addition to these induction coils there is employed a second set, 11, of special construction having two fixed spools, 21-22, to which line wires are connected and two movable spools 23 and 24 connected in the secondary circuit. These movable coils 23 and 24 may have their positions changed in order to vary the distance between them and the fixed coils and, consequently, the inductive action between the two sets of coils. In this way the circuits are to be balanced up so that cross talk between the main line and the phantom formed by connections taken off at points 16, may be avoided. Repeating coils 10 are to be used in order to increase the efficiency of the apparatus.

PARTY LINE INDICATOR.

Charles Kenney and Robert H. Leather, of Philadelphia, Pa., patent (No. 834,208; dated Oct. 23, 1906; filed April 25, 1904; serial No. 204,862) a telephone system.

The object of this invention is to provide means which will indicate at the central station the number of any particular subscriber on a party line who makes a call, and this is designed to be automatically accomplished without further action by the subscriber than the lifting of the receiver from the hook. Upon receipt of a call the operator may connect to the line a battery in series with the magnet of a register having an ammeter mechanism. Bells at different instruments on the line are intended to have graded resistances, so that the amount of current flowing through the register will be different for each station, causing the needle to point to the proper division on a dial marked to correspond to the individual stations which may send in a call. A modification of the invention provides a means whereby the registration is automatically effected without the performance by the operator of any action in addition to that necessary to answer a call.

TELEPHONE SYSTEM.

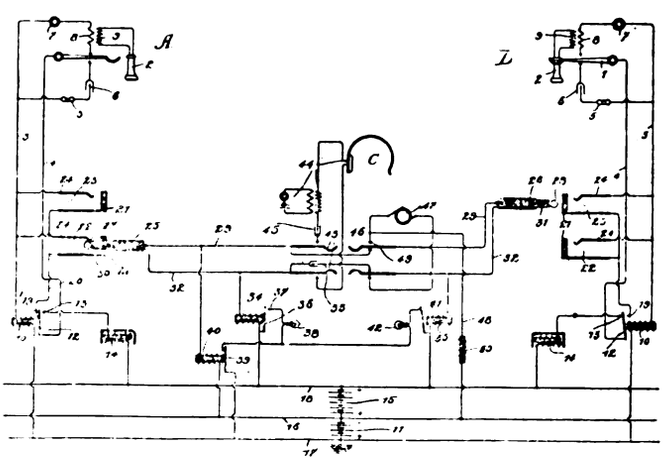
W. W. Dean, Chicago, Ill., patents (No. 833,733; dated October 23, 1906; filed December 23, 1902; serial No. 136,333) and assigns to the Kellogg Switchboard & Supply Company, Chicago, Ill., a telephone system.

The object of this invention is to do away with the use of separate line and cut-off relays in the subscriber's line circuit. In order to accomplish this the inventor uses a consequent pole relay to control the line signals. This relay is arranged with a winding in each of the line conductors, one of these windings having a high resistance, say 1,000 ohms, and the other wound with a low resistance, say 100 ohms; the number of turns in both windings is preferably made equal. When a call is made from the sub-station the calling current passes serially through the two windings producing equal fields of force, which serve to attract the armature to the consequent pole and illuminate the line signal. When the call is answered by the operator the high resistance winding of the relay is shunted by a low resistance supervisory circuit. Under these conditions the field of force produced by the 1,000-ohm winding will be so much less than the field of force produced by the 100-ohm winding that no consequent pole is produced, and the armature will fall back.

EXCHANGE SYSTEM.

Harry G. Webster, Chicago, Ill., patents (No. 840,726; dated January 8, 1907; filed May 28, 1903; serial No. 159,118) an exchange system.

Line limb 3 extends through the winding of cut-off relay 10, and thence to the positive grounded pole of the battery. Line limb 4 goes to armature 12, through contact 13 and line signal 14, and thence to the negative pole of battery. The cut-off relay 10 is wound with a low resistance coil, requiring a heavy current for its actuation, while the line signal 14, having many turns of fine wire in its coil, responds to a small current. Therefore, when the subscriber removes his telephone from the hook, line signal 14 is operated and relay 10 remains inactive. When, however, the operator plugs into the jack to answer the call, she closes a circuit from the bus-bar 16 through supervisory con-



trolling relay 40, which has a low resistance, tip strand 29 and thence through cut-off relay 10 and back to bus-bar 17.

This sends a comparatively large current through the cut-off relay, owing to the low resistance of relay 40 and the cut-off relay 10 is operated, disconnecting the line signal and connecting line limb 4 directly with the sleeve contacts 21 of the associated line jacks.

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With GRAY PAY STATIONS you simply drop the coin in the slot

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FOR SALE—1,000 Kellogg magneto telephones; Viaduct Mfg. Co. ringers; Wabash Cabinet Company's back boards and battery boxes. Good condition, almost new. Will sell singly or in lots. For particulars, write Kinloch Telephone Company, C. W. Shands, Purchasing Agent, St. Louis, Missouri. 755

FOR SALE—At half price, one hundred forty American Electric four-party, selective, ringing telephones. First class condition—most of them as good as new. Address Zenith Telephone Co., Duluth, Minn. 762

FOR SALE—Fisher Cable Testing Set, high sensibility galvanometer, 100000 ohm coil, Ayston shunt, ½ mf. sub-divided condenser, Wheatstone bridge. Original cost $485.00. Will sell at a bargain. J. W. Wright, 1304 Arch street, Philadelphia. 766

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FOR SALE—100 line American Electric switchboard. First-class condition. Cheap. Can ship about March 1st. Address Box 776, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 776

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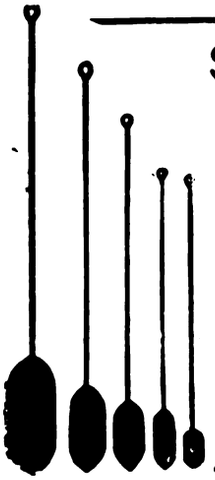
A GOOD opportunity for a young man with executive ability and thorough knowledge of telephone circuits, battery instruments in particular. Address Box 770, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 770

WANTED—Married man with five years' experience desires position as manager or troubleman. Three years with present company. A-1 references. Open March 1. Address Box 772, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 772

POSITION WANTED—An expert mechanic and designer wishes to make a change. Eighteen years' experience in the instrument and telephone lines. Technical training. Telephone engineering, Scranton School. Got the habit of "delivering the goods." Address Box 773, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 773

WANTED—A man with three years' experience as switchboard installer and four years as Superintendent of Construction, wants a position as Manager or wire chief of a common battery plant. At present employed as installer but is married and desires a local position. West or northwest preferred. Address Box 774, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 774

CABLE SPLICERS—Wanted, cable splicers to work on paper telephone cables. Highest wages paid to first class men capable of doing all kinds of cable work. For particulars, address Box 761, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 761



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IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

OPENING OF NEW ERICSSON FACTORY AT BUFFALO.

ANNOUNCEMENT has been made of the opening of its new factory at Buffalo, N. Y., by the L. M. Ericsson Telephone Mfg. Company. The booklet in which this information is given, from the design upon its cover to the arrangement of its inner pages, is exceptionally interesting and attractive, giving evidence of the highest care and skill in its preparation.

The company has stated its intention of using this new factory for the production of the highest grade of telephone apparatus. All preparations for this work have been made in the past twelve months, during which time the building has been completed and equipped with machinery selected from the markets of the world for its suitability for the economical production of high grade telephone apparatus.

The agency for this company's products, formerly made in Stockholm, but widely sold in this country, which has since 1897 been in the hands of Messrs. Smith & Hemenway, of New York City, has been by mutual agreement discontinued. All American orders for new equipment, and for renewals of old material, are hereafter to be handled by the company's Buffalo offices.

In the announcement of its policy, signed by Axel Bostrom, president, and Klas Weman, manager, it is stated that although an American company has been organized, and suitable modifications in the construction of the apparatus have been made to conform to American standards, the production of the company's own devices from its special designs and made with the same high degree of workmanship which has characterized the products of its Stockholm factory, will be continued in its new plant. The new organization is strictly independent of connections with any other concerns, and it is now ready to handle all orders and inquiries concerning its telephones and telephone supplies of all classes directly from its factory at Buffalo.

THE EWING-MERKLE ELECTRIC COMPANY, St. Louis, Mo., in the January number of its *Everbest Magazine* has the usual number of bright little articles and a number of electrical specialties are described. The company will send this book free of charge to interested persons.

THE AMERICAN ELECTRIC FUSE COMPANY, Muskegon, Mich., has prepared, in its catalogue No. 31, a very complete and interesting list of supplies for the protection of telephone circuits at various points. The field is completely covered, from the distributing frames at the central offices to various types of assembled panels and protectors for cable terminals, and the latest type of protection for the subscriber's station. The book contains information which is exceedingly well arranged, and the illustrations give a very good idea of the appearance of the apparatus. The company will be pleased to send this book to interested persons who ask for it.

THE TRUMBULL ELECTRIC MFG. COMPANY, Plainville, Conn., has just issued a very attractive folder showing several types of its well-known switches. Attention is called to the special features which have won such favorable notice for the Trumbull switches, among which may be mentioned the self-adjusting clips, which are set in recesses in the porcelain base to prevent turning; raised binding contacts for convenience in attaching wires, and other important details of construction. It is well known that the reliability of a switch is largely determined by the care with which the parts are assembled, and with regard to this point the Trumbull Company puts its case ingeniously as follows: "Our Switches are assembled by *Live Men*, not by Child Labor or Wooden Indians." To those who know the skill of the full grown Connecticut mechanic this would seem to be the final word on the subject.

FRANK B. COOK, 246 West Lake Street, Chicago, Ill., has issued a four page folder describing his new subscribers' station protectors. In this folder, while incidentally reference is made to the protectors sold by Mr. Cook, the greater part of the space is given over to some very interesting statements in regard to the value of protection in general. The possible consequences of failure to adequately protect a subscriber's station are clearly shown by a quotation from a verdict in a recent action for damages, where a telephone company lost heavily owing to its failure to provide reasonable protection. Reports of other accidents, with the amounts of the losses incurred, are given. Telephone companies anxious to investigate the subject of protection can obtain considerable useful information from this printed matter, which may be obtained in response to an inquiry mailed to Mr. Cook.

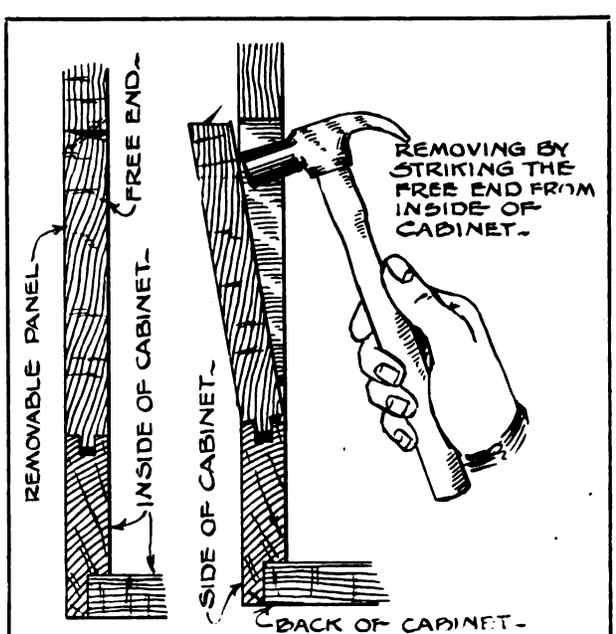

Fig. 1. Construction of side of Dean Express board cabinet, and method of removing panel to allow passage of cable to adjacent unit.

WOODWORK FOR UNIT CABINETS.

STANDARD cabinets for its express type switchboards are made in two sizes by the Dean Electric Co., Elyria, Ohio. One of these has an ultimate capacity of 150 drops, with 15 cord circuits and fifteen lamp transfer circuits, being arranged for a single operator, while a larger size is arranged for two operators with double the amount of equipment contained in the smaller cabinet. While these figures are for the ultimate capacity of a unit, smaller numbers of circuits may of course be installed.

In order to make it easy to establish the desired connections from the distributing racks to the switchboard, and from one unit to another when several are lined up in the operating room, an ingenious arrangement of paneling is provided. The woodwork of the cabinets is quarter-sawed oak put together so as not to warp or crack, and finished in a dark or golden oak. At each side of the unit cabinet is provided a removable panel, and this is normally secured and held firmly in place in the manner indicated at the left in Fig. 1. These removable panels are finished flush with the outer surface of the cabinet, so that up to the time it is desired to remove them they form a part of the regular finished surface.

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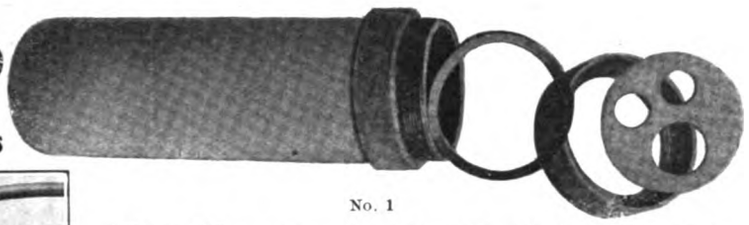
MONEY MATTHEWS TRADE MARK W.N. ESTABLISHED 1899 C.L. SPECIALTIES SAVERS



No. 1

The Hargis Cable Splicing Joint

It is a device for splicing lead cable, quickly, safely, economically, and with a large saving of money.

It is made in three sizes, No. 1, No. 2 and No. 3.

The method of using this money saver will be seen by studying the photographs, 2, 3, 4, 5, 6 and 7.

You will see that it saves cable and solder. It can be boiled out without any waste of paraffine. Pairs can be spliced easily and quickly. In case of trouble along the line it is easy to find pairs and test them out.

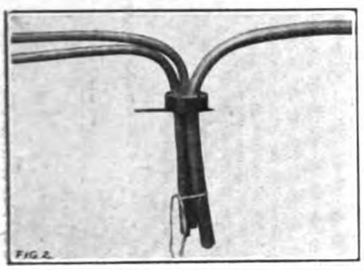


FIG. 2.

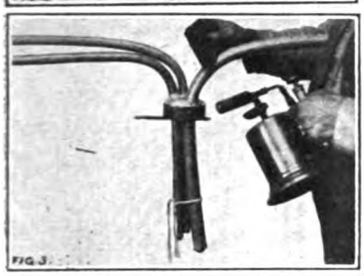


FIG. 3.

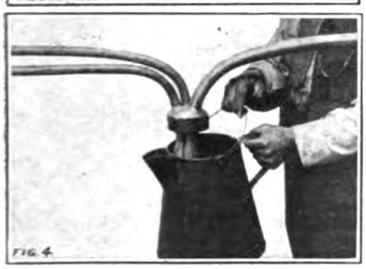


FIG. 4.

SOME POSSIBLE COMBINATIONS

A No. 1 Hargis Joint will take:

50 pair in, 2-50's out.
50 pair in, 50 out and a 10, 15 and 25 pair tap.
25 pair in, 25 out and a 10, 15 and 25 pair tap.
25 pair in, 25 out and a 10 and 15 pair tap.
25 pair in, 15 out and a 10 and 15 pair tap.
15 pair in, 15 out and a 10 and 15 pair tap.

A No. 2 Hargis Joint will take:

100 pair in, 100 out and a 10, 15, 25 and 50 tap out.
100 pair in, 75 out and a 10, 15, 25 and 50 tap out.
100 pair in, 3-50's out.
100 pair in, 2-50's out and a 10, 15 and 25 tap out.
100 pair in, 3-25's out.
100 pair in, 2-25's out and 10 and 15 tap out.
100 pair in, 1-25 out and a 10 and 15 and a 10 and 15 tap out.

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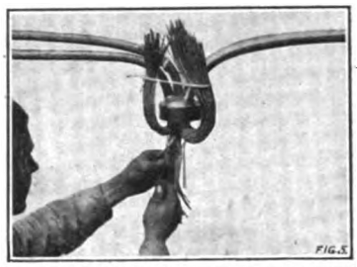
FIG. 5.

FIG. 6.

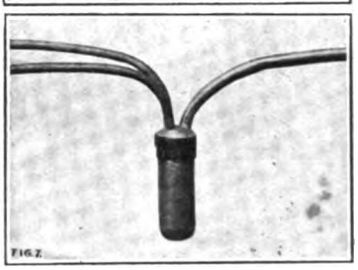
FIG. 7.

COMMON BATTERY TYPE CABINET MAGNETO PHONES

Sumter Standard Parts—with a few useful features the other fellow hasn't got yet

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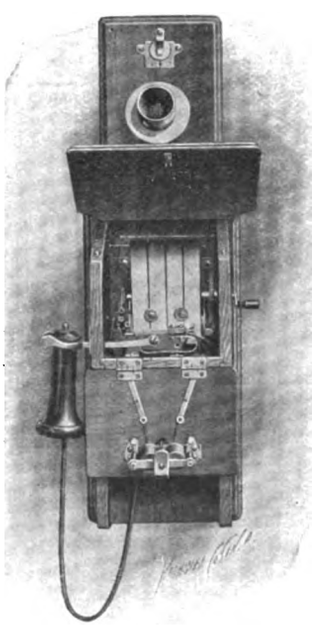

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1907 MODEL

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IN THE MANUFACTURING FIELD

When it becomes necessary to add an additional section, these panels are readily removed by a stroke of a hammer and the cables may be passed through the opening. In this way a particularly neat piece of work may be done, as it is wholly unnecessary to mar the finish of the board, which counts for much in addition to the time saved by the installer.

For the entrance of line cables and wires provision is made at the bottom of each cabinet. Holes are bored in the woodwork which completely encloses the bottom of the cabinet, and until it is time to use them are closed by plugs. These may be easily driven out and the wires passed through the opening thus made.

THE SANDWICH ELECTRIC COMPANY, Sandwich, Ill., has recently put upon the market the Sandwich Telegraphone, consisting of a combination of a telephone talking circuit and a special signalling apparatus so that the instrument may be used in connection with an ordinary telegraph wire without interfering with telegraph messages simultaneously transmitted.

The company claims that this apparatus will operate upon a quad or duplex circuit without interference. In designing the apparatus, the exceptional conditions under which it will be used were borne in mind, and exceedingly durable equipment is said to have been produced.

The company will be pleased to send full information to all persons connected with railways or other interests which may have occasion to equip a telegraph line for telephone service.

THE FARR TELEPHONE & CONSTRUCTION SUPPLY COMPANY, Chicago, Ill., is sending out several interesting folders describing its line of supplies and equipment for telephone companies. Among them are individual leaflets devoted to the 1900 dry battery, metal furniture for operating rooms and construction supplies. A feature is made of Rowland's long grip clamp for pulling up wires, which is a practical come-along in a compact form, giving a long contact surface on the wire. Its design prevents injury to the wire, and at the same time gives a grip which will stand an exceedingly heavy pull. Information regarding all the lines above mentioned, and other supplies of which the Farr company carries a complete line, will be cheerfully sent upon receipt of a request.

THE AMERICAN LAVA COMPANY, Chattanooga, Tenn., has issued a booklet describing the advantages of lava for various mechanical and electrical uses. It states that from the method of manufacture a considerable degree of accuracy of dimensions is possible in the construction of even very small bushings, etc. With respect to uniformity the material is said to offer some advantages over porcelain. Tests of the insulating resistance of the material show that very high figures are obtained. The company states that improvements in methods of working have made it possible to furnish this product at prices very much lower than former costs.

The booklet is well illustrated from photographs of many forms which are used commercially for insulating bushings, bobbins for resistance spools, etc. The booklet will be sent to all interested persons who address a request to the company.

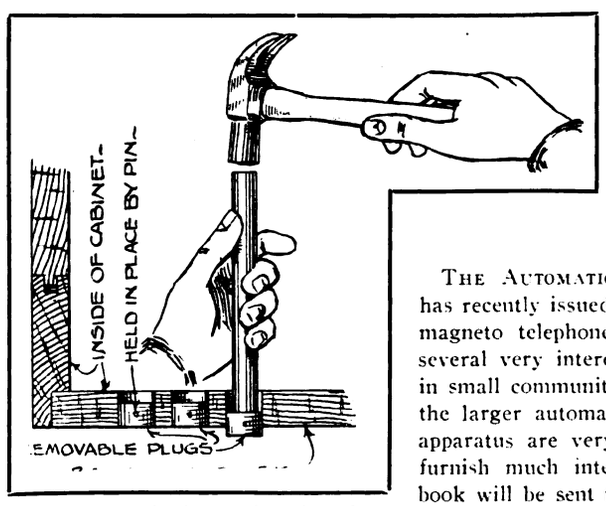

Fig. 2. Method of removing plugs from bottom of cabinet for entrance of line cables and wiring.

THE CENTURY TELEPHONE CONSTRUCTION COMPANY, Buffalo, N. Y., is to furnish the instruments and equipment for the new branch exchange at Cornell University, the contract for which, after careful consideration, has been recently awarded to the Ithaca Telephone Company, Ithaca, N. Y.

THE STACKPOLE BATTERY COMPANY, St. Marys, Pa., is sending out some interesting literature describing the Elk Brand Dry Cell, which is especially adapted for gas engine sparking and all ignition work. In its No. 6 cell the company also has a battery built especially for telephone work, which, in addition to the large amount of energy, which characterizes the output of all its types, is built for an extremely long life and to have good staying powers. The company states that very good results have been obtained in practice with these batteries, and will be pleased to send further information to all interested persons.

THE F. BISSELL COMPANY, Toledo, O., has in its latest catalogue described a number of interesting novelties which have been added to the well-known Security line of construction specialties. The field covered in this book embraces terminals for various classes of distribution, pole seats and platforms, braces, messenger cable cars, manhole guards, conduit rods, etc. The company will send this booklet to all interested persons.

THE CALCULAGRAPH COMPANY, 1437 Jewelers' Building, New York, is receiving many statements from telephone companies who have been able to effect economies by the use of the calculagraph. With the system of correct timing of toll tickets which is made possible by the use of this machine, there is little danger of loss of excess time on calls, and an indisputable record is furnished, which can be shown to the subscriber if there is any question as to the amount which should be paid on a ticket. The company will send full information upon receipt of a request.

THE AUTOMATIC ELECTRIC COMPANY, Chicago, Ill., has recently issued a very attractive bulletin devoted to magneto telephone switchboards. In it are described several very interesting types of switchboards for use in small communities which have lines connecting with the larger automatic exchanges. The descriptions of apparatus are very complete and well illustrated, and furnish much interesting information. Copies of the book will be sent to all persons who make their names known to the company.

THE PEIRCE SPECIALTY COMPANY, Elkhart, Ind., has just sent out an attractive catalogue of its steel construction specialties. Full descriptions of brackets for regular and special uses on poles, houses, etc., are included in this catalogue. An interesting development is a corner bracket for houses, and various types of wall brackets, rings, etc., which especially lend themselves to covered wire distribution along the sides of buildings. The bok contains so many interesting suggestions for managers interested in convenient and economical methods of distribution that it should have a wide circulation among telephone managers and superintendents of construction.

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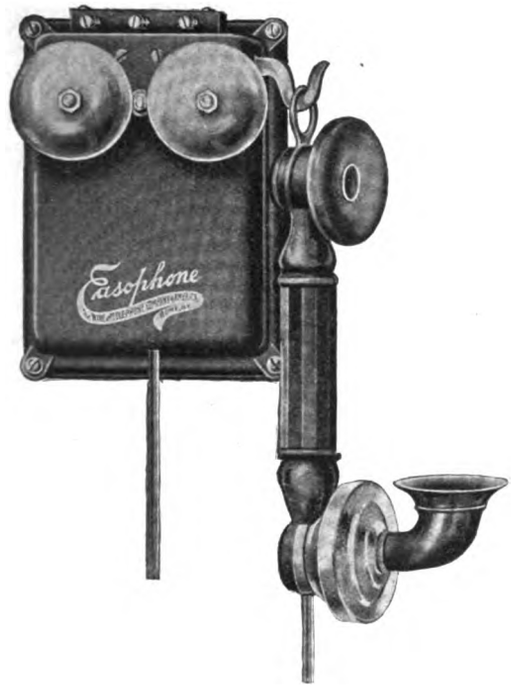

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ROME, N.Y.

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SOLID BACK TRANSMITTER
NO EXPOSED CONNECTIONS
SINGLE COIL RINGER
REVERSIBLE HOOK

WRITE FOR BULLETIN No. 101

THE WIRE & TELEPHONE COMPANY OF AMERICA
ROME, N. Y.

THE NEW WESCO FACTORY

THE opening of its new factory, shown in the illustration, indicates the rapid advance made by the Wesco Supply Company, St. Louis, Mo., and Fort Worth, Texas, to a leading position in the electrical and telephone field.

For a long time past this house has been prominent among dealers in electrical goods and in recent years has been constantly adding to its output various lines of its own manufacture. Among the articles manufactured by this company which have found an extensive sale may be mentioned the well-known Wesco soldering specialties, the Red Shield and Wesco dry batteries, the Hercules pliers, knife switches, panel boards and switchboards and the well-known line of telephones bearing the company's name.

THE NEW FACTORY OF THE WESCO SUPPLY CO. AT ST. LOUIS, MO.

A few years ago this company began to assemble its own telephones and since that time has gradually taken up the manufacture of parts until, within the last year, the instruments have been manufactured in practically complete form in its own factory.

The development of this manufacturing business brought the necessity for larger quarters and a large five-story brick building at the corner of Eighth street and Clark avenue, St. Louis, Mo., has recently been secured and equipped throughout with first-class machinery for the manufacture of a complete line of telephone instruments and telephone accessories. The company is now ready to turn out an entire product made entirely under its own supervision.

This plant is now in full operation, and the company announces that all its manufacturing products will have a quality and efficiency fully up to the standard which its customers have learned to expect from their transactions with the company in the past.

The company will continue to carry in stock large quantities of batteries, wire, construction material and all other supplies necessary for telephone work. Prompt shipments of these goods can be made from either the main office at St. Louis or the branch house at Fort Worth, Tex.

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NEW COMPANIES.

BLOUNTSVILLE, ALA.—The Blount County Telephone and Telegraph Company has been incorporated with a capital stock of $6,000.

PARIS, ARK.—An Independent telephone company, to be known as the Greasy Valley People's Telephone Company, has been organized at Paris. It will construct and operate lines from Greasy Valley to Paris, and the following officers have been elected: H. H. Brown, president; J. C. Freeman, vice president; E. N. Lee, secretary; A. A. Freeman, R. E. Rogers and W. L. Varn, directors.

PLAINVILLE, CONN.—The Empire Electric Mfg. Company has recently been incorporated for the purpose of manufacturing high grade electrical goods. A specialty will be made of switches for electrical circuits.

PLYMOUTH, IND.—A Mutual Telephone Company is being organized by the farmers of Plymouth. A similar movement has been started in Bourbon and Walnut townships, and indications point to a full county organization.

SERGENT, KY.—An Independent telephone company is being organized at Sergent to construct lines to Craftsville, Millston, Horn and Baker.

SOUTHWEST HARBOR, ME.—Articles of incorporation have been filed by the Island Telephone Company, which plans to build lines in Southwest Harbor, Tremont and Cranberry Isle. It has an authorized capital stock of $10,000, and the incorporators are Thomas S. Tapley, Guy H. Parker, L. S. Springer and F. M. Mullan, of Tremont, and Geo. A. Neal and W. A. Tower, of Southwest Harbor.

PONTIAC, MICH.—The Oakland County Telephone Company has been reorganized and is to be incorporated with a capital stock of $500,000. The following officers have been elected: A. C. Himebaugh, of Burr Oak, president; J. A. Graley, Pontiac, vice president; A. G. Griggs, Avon, secretary and treasurer. It is the company's intention to construct an entire new plant, it's plans for improvement including, besides the installation of a new switchboard having a capacity for 2,300 telephones, the building of many new lines.

MADISON, MINN.—The Madison Telephone Exchange has become the property of J. R. Swann, J. J. Little, Wm. Kitzinger, P. G. Jacobson and R. H. Greer, and is to be incorporated with a capital stock of $15,000. A strictly up to-date system is to be installed by the new company.

BETHEL, MO.—An Independent telephone company, to be known as the Bethel Telephone Company, has been organized, and will construct a line to Metz, at which place it will connect with the Metz Telephone Company. The officers of the new company are R. L. Graham, president; N. S. Brown, vice president; R. L. Yeates, secretary and treasurer; J. Thomas, D. F. Carey and S. T. Shellenberger, directors.

HAMILTON, MO.—Articles of incorporation have been filed by the Hamilton Telephone Company. The capital is placed at $30,000, and the incorporators are H. B. Cooper, J. N. Munsell, W. E. Munsell and others.

PATTONSBURG, MO.—The Pattonsburg Home Telephone Company has been incorporated with a capital stock of $25,000. Among the incorporators are Elwood Morrison, S. N. Grover, James M. Eyeler and others.

SMARTVILLE, NEB.—The Mutual Telephone Company has been reorganized and incorporated with a capital stock of $25,000, and the following officers have been elected: C. Swiklinski, president; David Bowen, vice president; James Murphy, secretary; Henry Hintz, treasurer.

JEWETT, N. Y.—The Schoharie Valley Telephone Company, with a capital stock of $2,000, has filed articles of incorporation and has elected the following directors: John Stickels, of Hunter; N. W. Ploss, J. H. Gripman, G. W. Dunham, F. A. Ford, F. C. Carr, E. Ploss, S. R. Lewis and A. Chatfield, of Jewett. It is the company's intention to build lines connecting Lexington, Jewett, Hunter, Haines Hall and Tannersville.

VESTAL CENTER, N. Y.—Articles of incorporation have been filed by the Vestal Center Telephone Company. The company is capitalized at $2,000, and its intention is to construct lines from Vestal Center to Binghamton, St. Joseph, Willow Point and Tracy Creek. The directors are B. L. Harford, John Rounds, J. P. Gardner, A. A. Brimmer, M. J. Morton, C. D. Kellam and C. H. Woodruff.

CLAYTON, N. C.—Articles of incorporation have been filed by the Clayton Telephone Company. It has an authorized capital stock of $3,000 and the incorporators are Ashley Horne and others.

FULLERTON, N. D.—A Farmers' Telephone Company, whose intention is to construct rural lines at Fullerton, has been organized.

FREDERICK, OKLA.—The Tillman County Telephone Company, of Frederick, has been incorporated with the following incorporators: F. D. and M. B. Stalford, of Frederick, and John Massey, of Guthrie. The capital stock is placed at $20,000.

NEW GALILEE, PA.—The Big Beaver Telephone Company is being organized by the farmers in the vicinity of New Galilee. Among those largely interested in the new company is A. H. Hoopengartner.

NEW WILMINGTON, PA.—A new Independent Telephone Company is being organized at New Wilmington by J. W. Cox, J. B. Elder and others.

ARMOUR, S. D.—An Independent Telephone Company has been organized at Beulah (P. O. address Armour, S. D.) to construct lines between Beulah, Sand Creek, Spearfish and other places. Among the organizers are Frank Avery and Fred Robinson.

HAMLIN, TEX.—The Orient-Santa Fe Telephone Company, of Hamlin, has been incorporated with a capital stock of $25,000. The incorporators are H. B. Foreman, W. L. Walton and E. A. Lee.

SEGUIN, TEX.—The Mill Creek Telephone Company is the name of the new farmers' telephone company organized at Seguin, and the following officers have been elected: H. C. Buhler, president; Marvin Lillard, secretary and treasurer.

WEHDEM, TEXAS.—The Wehdem-Brenham Telephone Company has been incorporated with the following incorporators: W. J. Reinicke, H. Roppelmeyer, A. P. Chernosky, W. Rhode and Henry Remmert.

RUTLAND, VT.—The incorporators of the Vermont Home Telephone Company, which was recently granted a charter to operate an Independent service by the Vermont Legislature, recently met in Rutland and organized by electing the following board of directors: C. O. Perkins, C. S. Caverly, F. A. Field, W. H. Baldwin, of Rutland; I. H. Griswold, Howard Hendrickson, I. R. Coughtry, of Albany; F. H. Sudro, T. M. Brush, of Elyria, O.

GRANTSBURG, WIS.—An Independent Telephone Company is being organized at Grantsburg. Among those interested in the proposition are R. J. Meland, A. Paulson, S. N. Hanson, E. Johnson, F. R. Huth and others.

HILLSDALE, WIS.—Articles of incorporation have been filed by the Hillsdale Western Telephone Company. It has a capital stock of $2,500, and the incorporators are M. W. Stephenson and others.

NORWALK, WIS.—Plans for the formation of a new Mutual Telephone Company at Norwalk are being considered by the citizens of this city. An exchange will be installed at Norwalk and connections established with Sparta.

SACKVILLE, N. B., CAN.—A new telephone company is to apply for a charter to the local legislature to build toll lines throughout the province. The company expects to have a capital of one-half a million dollars, of which over $150,000 has already been subscribed.

FRANCHISES.

DOWNEY, CAL.—The Downey Home Telephone & Telegraph Company has applied for franchises at Norwalk, Downey and Los Nietos, and the Board of County Supervisors expects to advertise for sale a telephone and telegraph franchise to cover these towns.

LOMPOC, CAL.—A franchise has been granted to the Home Telephone Company at Lompoc, and work on the system will be commenced at once.

HUDSON, MICH.—The Southern Michigan Telephone Company, an Independent company, has been granted a thirty year franchise at Hudson, and will build a system at this place.

UNION CITY, MICH.—Application has been made by the Himebaugh Telephone Company for a franchise at Union City.

COMBINATIONS.

SUFFOLK, VA.—W. N. McAnge, who is one of the largest individual telephone owners in the South, has recently sold the Virginia and Carolina Telephone Company to the Atlantic Coast Telephone Company, of Suffolk, Va. He has been appointed president and general manager of the latter company, and will make extensive improvements in the system. It is hoped that terminal facilities in Richmond will soon be obtained, after which he will complete the line to that city.

ELECTIONS.

WHITTIER, CAL.—The following officers have been elected by the Whittier Home Telephone Company: Albert Hadley, president; E. W. Bacon, vice president; Olive L. Spencer, secretary; A. Wardman, general manager; First National Bank, treasurer.

GERLAW, ILL.—The Indian Grove Telephone Company has named the following officers: President, A. McQuerry; vice president, R. J. Rohr; secretary and treasurer, J. R. Armstrong.

COIN, IOWA.—The following officers have been elected by the Coin and Yorktown Telephone Company: President, A. L. Johnston; vice president, D. Cutler; secretary, F. E. Handorf; treasurer, W. Cutler; directors, E. Corder, R. Draper and A. King.

ELDRIDGE, IA.—The Eldridge Mutual Telephone Company has elected the following officers: President, F. C. Gagahan; vice-president, J. B. Crouch; secretary, M. H. Calderwood; treasurer, H. W. Bruhn.

LIBERTYVILLE, IA.—The following officers have been elected by the Libertyville Telephone Company: S. K. Davis, president; E. A. Wilson,

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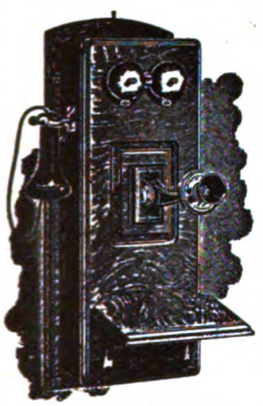

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THE WEEK'S MESSAGES

vice-president; Mahlon Williams, secretary; D. W. Garber, treasurer.

KIOWA, KAN.—The Union Telephone Company has elected Henry Welch, president; H. A. Ritter, vice president; A. C. Hoefer, secretary; O. L. Cully, treasurer; J. D. Williams, G. F. Keeler, W. E. Barkley, Frank Veatch and W. H. Mahoney, directors.

LERDAL, MINN.—The Lerdal Telephone Company has elected Andrew Henry president, Andrew Brown vice-president, J. J. Berkvam secretary, and P. P. Overgard treasurer.

ALBANY, MO.—The following officers have been elected by the Gentry County Telephone Company: J. W. Robertson, president; J. J. Davis, vice president; R. M. McCammon, secretary and treasurer.

ST. LOUIS, MO.—The Kinloch Telephone Company has named the following directors: W. D. Orthwein, C. M. Forster, A. Gehner, A. Busch, B. Jones, S. M. Kennard, W. J. Lemp, Jr., H. Nicolaus, W. H. Nolker, P. Stock, J. S. Walsh and H. Linton Reber.

WILTON, N. H.—The following officers have been named by the Wilton Telephone Company: President, G. E. Bales; secretary and treasurer, W. H. Emerson; general manager, H. L. Emerson.

DARIEN, N. Y.—At the annual meeting of the Darien Telephone Company the following officers were elected: President, Nelson Harper; vice president, W. H. Norton; secretary and treasurer, E. J. Shirm.

MIDDLETOWN, N. Y.—The Middletown Telephone Company has elected the following directors: C. A. Ketcham, G. W. Potter, W. C. Ramsdell, Dr. Edwin Fancher, Dr. J. B. Hulett, Dr. M. C. Connor, G. Coleman, R. F. Walsh and D. G. Comings.

RIVERSIDE, N. Y.—The following directors have been elected by the Riverside Telephone Company: H. Robbins, M. Albright, D. P. Chapman, C. H. Van Cott, G. Burlison and Geo. Gregory.

SANDUSKY, OHIO.—The following officers have been named by the Sandusky Telephone Company: President, Geo. Feick; vice president, T. T. Morgan; secretary, J. C. Hauser; treasurer, J. A. Giedeman.

MISCELLANEOUS.

ALTURAS, CAL.—The telephone system operating between Alturas and Lake View has become the property of B. F. Lynip, of the Alturas First National Bank, and S. O. Cressler, of the Lake View National Bank. The new owners expect to greatly improve and enlarge the plant.

TOLEDO, O.—There is a movement on foot among the Farmers' Mutual Telephone Companies of northwestern Ohio to connect up all the systems to give the subscribers the benefit of the use of every mutual telephone in the territory.

MILTON, W. VA.—Connections are to be made between the Milton Telephone Company and the Union Ridge & Ohio River Telephone Company.

PERSONAL.

H. E. TERRY has been appointed manager of the Central Union Telephone Company's exchange at Moline, Ill.

J. M. TUTTLE, of Hortonville, Wis., has been appointed manager of the Wisconsin Telephone Company's exchange at Beloit, Wis.

New Construction in the Field

RUSSELLVILLE, ARK.—The lines of the Russellville Telephone Company are to be extended.

ANAHEIM, CAL.—New switchboards are being installed by the Home Telephone Company in its exchanges at Anaheim and Fullerton.

DALTON, GA.—The Dalton Telephone Company contemplates the erection of new lines from Chatsworth to Spring Place.

INDUSTRY, ILL.—It is the intention of the Industry Rural Telephone Company to make many improvements in its system.

PEORIA, ILL.—It is the intention of the Citizens' Telephone Company to construct a metallic toll line between East Peoria and Washington.

QUINCY, ILL.—Many new lines are to be built by the Adams County Telephone Company.

QUINCY, ILL.—The Mississippi Valley Telephone Company contemplates the establishment of a long distance service into Quincy.

BORDEN, IND.—The Farmers' Union Telephone Company expects to build two new lines, one from near Greenville, and one from the head of the Indiana Creek.

SOLDIER, IDAHO.—The lines of the Local Telephone Company are being extended throughout Blaine county.

SIOUX CITY, IOWA.—New lines are being constructed by the New State Telephone Company from Sioux City to Council Bluffs via Onawa and Missouri Valley.

OWENTON, KY.—A telephone line from Owenton to Monterey, by way of Cedar Hill, is to be erected by J. A. Johnson.

PALERMO, ME.—Lines to Western Ridge are being constructed by the Palermo Telephone Company.

LESLIE, MICH.—The Onondaga, Porterville & Leslie Telephone Company is extending its system north and west of the village.

ODIN, MINN.—The Odin Telephone Company is building a line from Odin to Echols.

ROCHESTER, MINN.—The Rochester Telephone Company expects to erect a new exchange at a cost of $25,000.

HASTINGS, NEB.—New lines are being built by the Hastings Independent Telephone Company.

HULL, NEB.—The Hull Telephone Company, which has erected a line to Harrisburg, also contemplates the erection of a line to Epworth.

SEARCHLIGHT, NEV.—The system of the Searchlight Western Telephone Company is being extended from Searchlight to Nelson.

WARREN, N. H.—It is the intention of the Baker's River Telephone Company to erect new lines from Warren to Haverhill.

BELFAST, N. Y.—A new switchboard is being installed by the Belfast Telephone Company.

CLIFTON SPRINGS, N. Y.—Among the improvements under way by the Clifton Springs Telephone Company is the erection of a new line to Hopewell.

NEWBURGH, N. Y.—Among the many improvements planned by the Newburgh Home Telephone Company is the installation of a new plant at this city, the building of lines to Fishkill and other places, and connection with all the Independent lines up the State.

VESTAL CENTER, N. Y.—New lines are to be built by the Vestal Center & Bunn Hill Telephone Company.

WILLOW POINT, N. Y.—Considerable construction work is being done by the Willow Point Telephone Company.

BISMARCK, N. D.—The North Dakota Independent Telephone Company contemplates the expenditure of several hundred thousand dollars in improving its system. New toll lines are to be built and an exchange installed at Bismarck.

EDINBURG, N. D.—Two new lines are to be constructed by the Edinburg Telephone Company.

FARGO, N. D.—Residents of North Dakota will probably soon be able to secure direct telephone connections with Winnipeg and all other cities and towns of Manitoba, Canada, through the North Dakota Independent Telephone Company, of Fargo, N. D.

COLUMBUS, O.—The Columbus Citizens' Telephone Company contemplates the expenditure of about $6,000 in improvements.

COLUMBUS GROVE, O.—The proposed new construction work of the Columbus Grove Farmers' Mutual Telephone Company includes the erection of a line from Columbus Grove to the German settlement.

COSHOCTON, O.—It is estimated that about $20,000 will be spent by the Citizens' Telephone Company in its proposed extensions and improvements.

FINDLAY, O.—The Western Ohio Railroad, an electric line operating between Findlay and Wapakonetta, is putting in an independent telephone system for the exclusive use of the road.

MANSFIELD, O.—Many improvements and extensions in its system are to be made by the Mansfield Telephone Company.

SANDUSKY, O.—Fifteen thousand dollars is to be expended by the Sandusky Telephone Company in the improvement of its system.

KUTZTOWN, PA.—Additional lines are being built by the Kutztown Telephone Company from Kempton to Steinsville, Lynnport, Tripoli, Mosersville and other places.

PITTSBURG, PA.—The American Union Telephone Company, which was formed about three months ago by the consolidation of the majority of the Independent lines of Pennsylvania and adjoining States, is about to commence the actual work of the construction of the new Pittsburg-Philadelphia line.

WENTWORTH, S. D.—The lines of the Farmers' Telephone Company are to be extended.

BELMONT, W. VA.—It is the intention of the Belmont Telephone Company to construct additional lines to Bellaire, St. Clairsville, Barnesville, Martins Ferry and other places. In addition to the above extensions, it contemplates the installation of a new submarine cable from Martin's Ferry to Wheeling.

EDMONTON, ALBERTA, CAN.—The Alberta government has decided to construct a third long distance telephone line, and will soon commence operations on a line to connect Lacombe and Stettler, a distance of fifty-one miles. Address Hon. W. H. Cushing, Calgary, Alberta.

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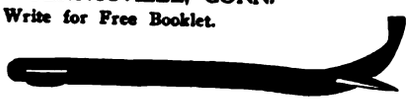
Manufacturers of
MALLEABLE IRON GUY CLAMPS
We Galvanize by the Hot Process
PITTSBURG, PA

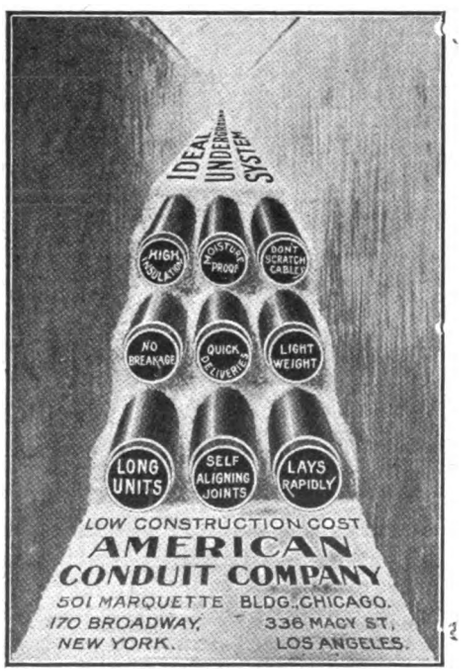
The Celebrated
DONNELLY CLIMBER
is made of the toughest and best steel obtainable. It is guaranteed not to break. You can trust your life to it with perfect safety.
The Donnelly climber is now made exclusively by
The Blakeslee Forging Co.
PLANTSVILLE, CONN.
Write for Free Booklet.



SAMUEL G. McMEEN — KEMPSTER B. MILLER
McMEEN & MILLER
ENGINEERS: CONSTRUCTORS
Telephone and Telegraph Properties
MONADNOCK BLOCK — CHICAGO

BEWARE OF IMITATIONS

For the protection of our customers we advise that Klein's Pliers are being imitated to LOOK LIKE KLEIN'S. This, however, does not make them Klein's. CAUTION. Look for this stamp, M. KLEIN & SONS, on the inside of handles—NONE are genuine without this stamp.
Use only genuine Klein's. They are the product of years of experience and have stood the test of time.
MATHIAS KLEIN & SONS · CHICAGO, ILL.



W. H. CRUMB & COMPANY
ENGINEERS CONTRACTORS
TELEPHONE ENGINEERING AND CONSTRUCTION
Plans, Specifications and Estimates Promptly Furnished
First National Bank Building — CHICAGO, ILL.

WESTON
STANDARD PORTABLE DIRECT READING
Voltmeters, Ammeters, Millivoltmeters, Voltammeters, Milliammeters, Ohmmeters, Portable Galvanometers, Ground Detectors and Circuit Testers.
Our Portable Instruments are recognized as THE STANDARD the world over. Our STATION VOLTMETERS AND AMMETERS are unsurpassed in point of extreme accuracy and lowest consumption of energy.
WESTON ELECTRICAL INSTRUMENT CO.
Main Office and Works, Waverly Park, NEWARK, N. J.
London Branch—Audrey House, Ely Place, Holborn.
Paris, France—E. H. Cadiot, 12 Rue St. Georges.
Berlin—European Weston Electrical Inst. Co., Ritterstrasse, No. 86.
New York Office—74 Cortlandt Street.

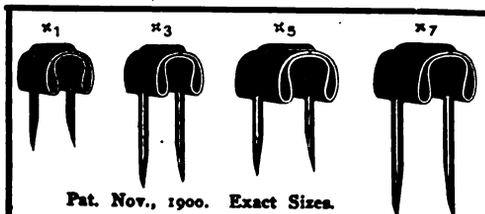
Weston Standard Portable Direct Reading Voltmeter.

Couch
Manufacturers of
The "Couch" Automatics
S. H. COUCH CO., Inc., 162 Pearl St BOSTON, MASS.

AT A STANDSTILL.

"He boasts that he doesn't advertise, but he's doing business still at his old stand."

"He means he's doing business at his old standstill."—*Philadelphia Press.*



Pat. Nov., 1900. Exact Sizes.

Blake Insulated Staples
Blake Compressed Cleats
Manufactured and For Sale by
Blake Signal & Mfg. Co.
246 Summer St., Boston, Mass.

Exact size. Patented July, 1906.

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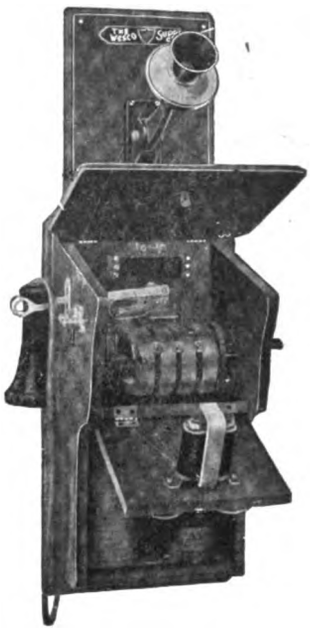
Quality Higher Than Price

¶ It's an easy matter to talk quality and price, but quite another to produce the goods to back it up.

¶ We have always put more faith and dollars into securing good materials and employing skillful and intelligent labor in the manufacture of our telephones than in advertising the fact, and the careful buyers are beginning to find it out.

¶ Prejudice and ignorance may hold the fort for a day, but merit and fair dealing in the end are invincible.

¶ We solicit your inquiries and an opportunity to quote prices and submit samples of our product.

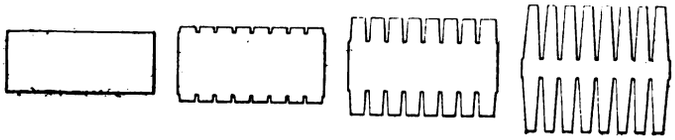


THE WESCO SUPPLY COMPANY

"Everything Electrical"

Branch Warehouse
Fort Worth, Texas

ST. LOUIS, MISSOURI



In Forming the Gould Plate

no metal is removed from or added to the "blank plate." The blank plate is simply changed in form; the lead "spun" into numerous narrow ribs, creating a large contact surface for active material. The diagrams show how this process is accomplished.

Every detail of our batteries is significant of the perfection of the whole.

Write for our literature on telephone batteries.

SALES OFFICES
Boston—89 State St.
Chicago—Rookery Bldg.
San Francisco—Monadnock Building.
Toronto, Ont.—62 Wellington St., West.

Gould Storage Battery Co.

MAIN OFFICES
1 West 34th St.,
New York City.
Works, Depew, N. Y.

JUST A SUGGESTION

Take one of your busy 4-party lines and equip it with "POOLE" Lock-Outs. Leave it in service a month and then see how many of the four will stand a raise of $3.00 a year rather than go back to the old way. We know the answer, but we want your subscribers to impress on you the fact that the "POOLE" Lock-Out is a rate-raiser.

It won't cost you anything to try it, because we will loan you the Lock-Outs free and there is no other equipment required. Write today for our Booklet AL-2.

Mountain State Electrical Company

WHEELING, W. VA.

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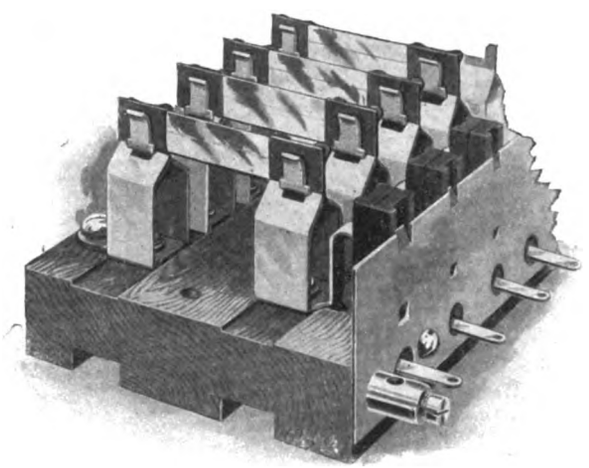
DEAN TELEPHONE APPARATUS

EXPRESS SWITCHBOARD ARRESTERS



The above illustration shows our new arrester to be used in connection with our express switchboards.

Like all other Dean apparatus it is built to eliminate trouble—a most common occurrence in small switchboard arresters.

The fuses are tightly gripped in special clamps which always hold their pressure. This is made possible by a peculiar construction of the springs which will not allow the clamps to be spread enough to spoil the tension.

The metal parts of this arrester are securely fastened together by means of hollow rivets, thus assuring a positive electrical connection from the line cable to the switchboard cable. No dependence is placed on the woodwork or the binding through insulation material, as in other arresters of this kind, for this circuit.

See our folder No. 6 for further details. It will pay you to investigate our express type equipment before placing your next order.

Factory and General Office
Elyria, O.

Branch Office
Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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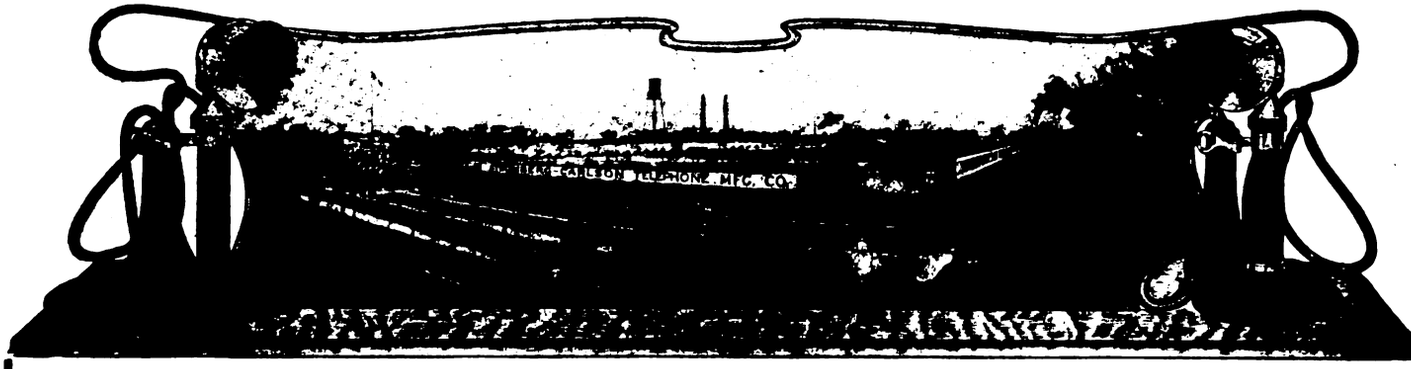

STROMBERG-CARLSON TELEPHONE MFG. CO.

ROCHESTER, N.Y. CHICAGO, ILL.

Can make prompt shipment of standard telephones and parts from stock.

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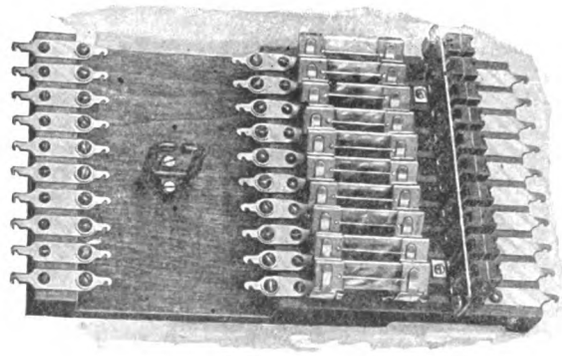
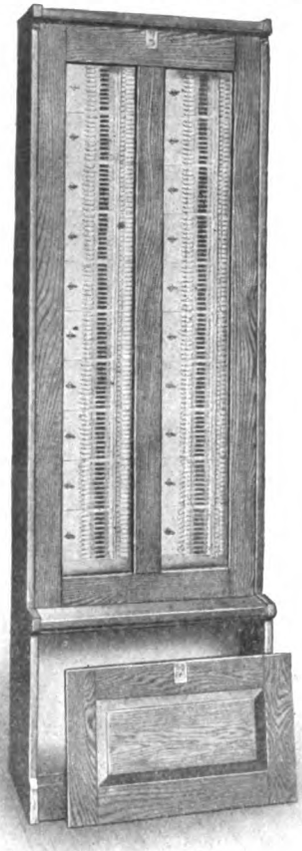
MONARCH

ARRESTERS AND ARRESTER CABINETS

The arresters are mounted five per strip so that it is not necessary to buy more lines of protector than there are lines in the switchboard. The construction shows the usual Monarch Characteristics of strength and durability. The connectors are heavy brass and the spring clips bring sufficient pressure to bear against the fuses and carbons to positively insure good contacts. The ground plate is a wide strip of brass slotted at one end and fitted with a screw at the other end, so any number of sections can be mounted one above another.





The arrester cabinet is designed to fill a demand for a neat and yet inexpensive cabinet for magneto exchanges using fuse and carbon arrester sections. It is made in two sizes: One for 100 metallic lines and the other for 150 metallic lines. The removable glass front and bottom panel afford easy access to the arresters and the cables coming to them.

Monarch Telephone Mfg. Co.
CHICAGO, U.S.A.

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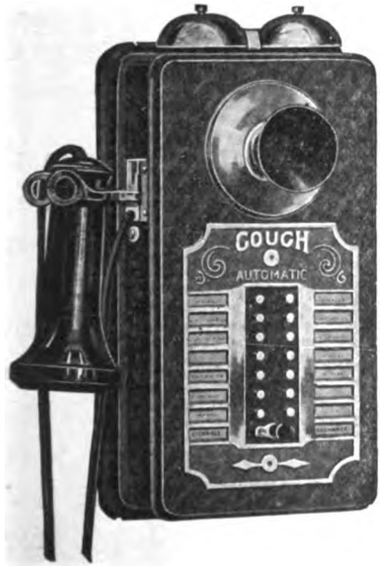
¶ "If you are a successful SALESMAN of telephone equipment, experienced in landing both magneto and common battery deals; if you can sell on quality, equipment of merit, and can secure fair prices; if you are sober and industrious, if you are looking for a splendid opportunity to advance, it will be to your interest to write to-day, giving full particulars of your past work to MANUFACTURER, care of American Telephone Journal."

Rent your subscribers a system of



Couch Automatic Intercommunicating Telephones

with trunk button for exchange connection.

It's an "operator-less" private branch exchange, giving automatic intercommunication between departments.

Any station can secure immediate city exchange connection by the pressure of the trunk button.

Ask us about it

STANDARD SIZES:

8	intercommunicating buttons,	1	exchange	button	
14	"	"	1	"	"
18	"	"	1	"	"
24	"	"	1	"	"
26	"	"	1	"	"

100% CHEAPER THAN BRANCH EXCHANGE

100% QUICKER; 100% MORE SATISFACTORY.

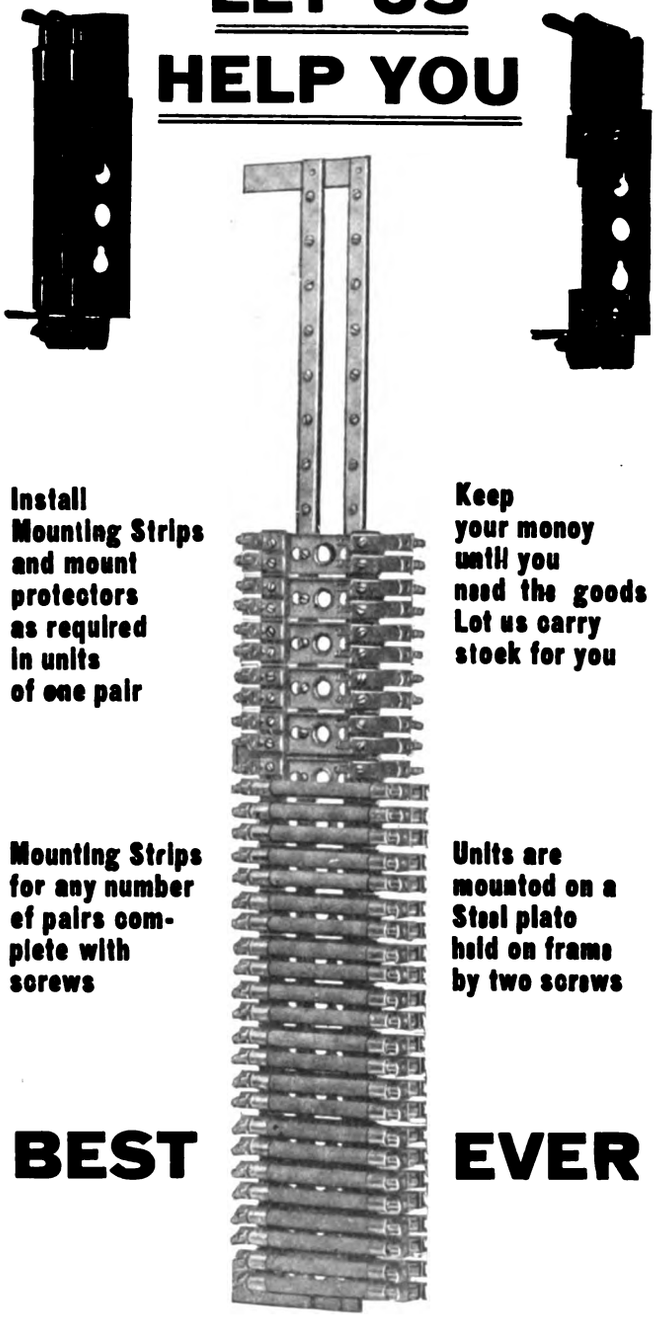
S. H. COUCH CO., Inc., Manufacturers

162 PEARL STREET, BOSTON, MASS.

INSTALLMENT PLAN

UNIT TYPE FUSE AND CARBON PROTECTION

LET US HELP YOU



Install Mounting Strips and mount protectors as required in units of one pair

Keep your money until you need the goods Let us carry stock for you

Mounting Strips for any number of pairs complete with screws

Units are mounted on a Steel plate held on frame by two screws

BEST EVER

Sterling Electric Co.

Makers of Good Goods

LaFayette -- -- -- Ind.

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COMMERCIAL

OUR TRADE MARK

COMMERCIAL ELECTRICAL SUPPLY COMPANY. HIGHEST GRADE ST. LOUIS TRADE MARK

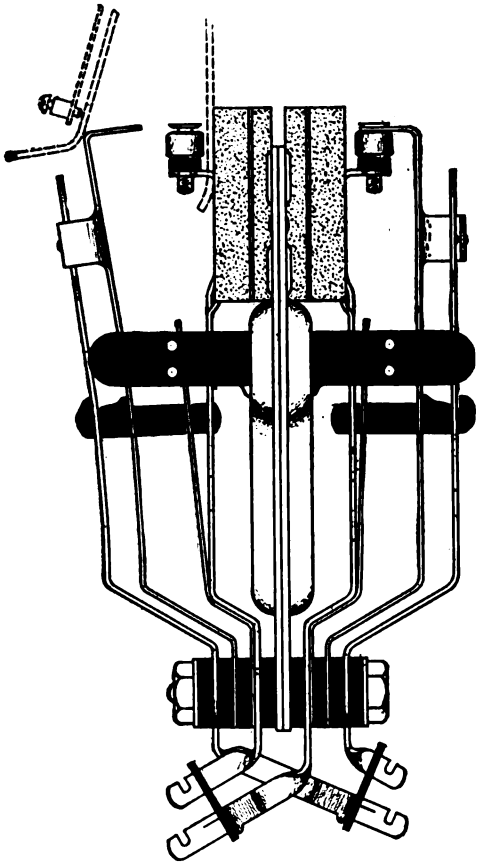
Every time you see it on correspondence on your desk it means a chance to save money.

We issue quarterly a net price list of line construction lumber, plain and galvanized hardware and telephone wires and cables. It contains up-to-date market prices and enables prospective purchasers and engineers to make estimates on new construction. Ask for it and you will be placed on our lists and receive it regularly.

Commercial Electric Supply Co.

15th STREET, ST. LOUIS, MO.

COMMERCIAL



No. 10 Protector—Sectional View.

Cook's No. 10 Protector

THE automatic heat coil test, which is absolutely necessary in Cook's No. 10 Protector, before a spring which has been operated can be reset, is only ONE desirable feature of this protector.

The heat cartridge isn't a WIRE coil—it can't burn out or short circuit. It has a METAL SHELL which will not burn up and start fire in the coils above it.

It has so MANY other splendid points that we'd like to have you write for some more information before ordering or specifying switchboard protectors.

Frank B. Cook.

MANUFACTURER,

238 West Lake Street, - - CHICAGO, ILL.

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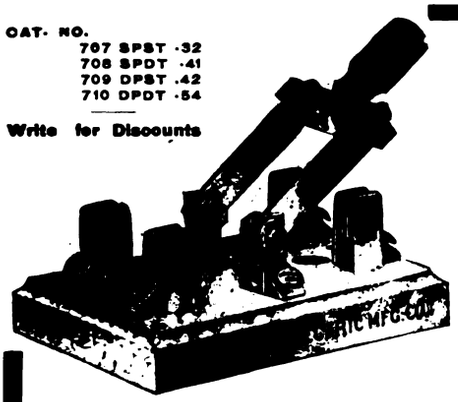


TRUMBULL TELEPHONE SWITCHES

Thousands Sold Each Month—Their Quality is Recognized

PERFECT ALIGNMENT
NO LOOSENED CLIPS
NO WARPED BASES

Each Switch is Inspected before leaving the Factory

WRITE FOR BULLETIN

IT TELLS ALL ABOUT THEM

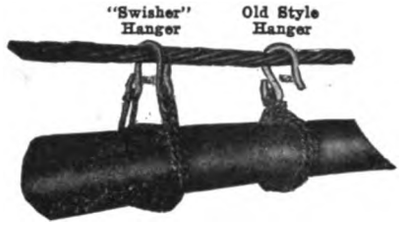
The Trumbull Electric Mfg. Co.

NEW YORK 136 Liberty St. PLAINVILLE, CONN. BOSTON 65-67 Oliver St.

SWISHER CABLE HANGER

(PATENT PENDING)

Only Best Marline and Houseline used. Double Galvanized Hooks. Hook cannot become detached from Strand. Hook cannot straighten. Stringing overhead wires will not catch in hook.



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Manufactured by THE W. G. HAGEL ELECTRIC CO.

26-30 ST. CLAIR STREET, TOLEDO, OHIO

U. S. COMBINED

Cash Register and Pay Station

[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE United States Coin Register Co.

TOLEDO, OHIO

ORANGEBURG

Fibre Conduit

FOR UNDERGROUND SYSTEMS

WRITE FOR CATALOGUE

The Fibre Conduit Company

Orangeburg, N. Y.

Boston Office, 110 State St. Chicago Office, 1760 Monadnock Bldg

PIERSON, ROEDING & CO.

SAN FRANCISCO, CAL. LOS ANGELES, CAL. SEATTLE, WASH.

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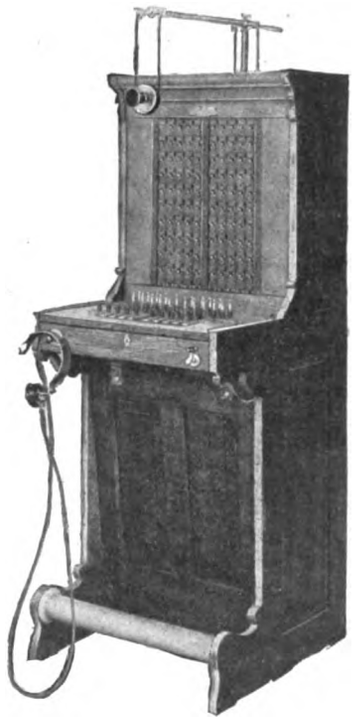
KELLOGG

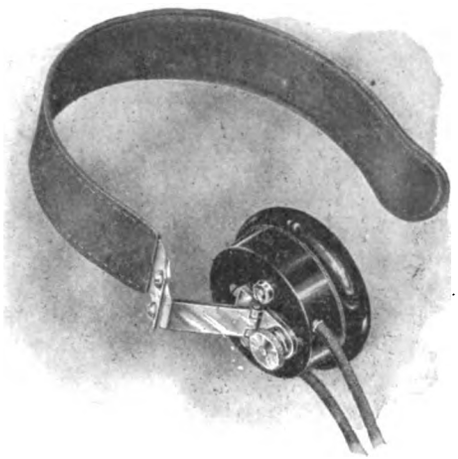
TELEPHONE APPARATUS

MAGNETO SWITCHBOARDS

ARE EQUIPPED WITH KELLOGG

WATCHCASE HEAD RECEIVER





This type of a receiver is very compact.

The shell is entirely made of hard rubber and has a removable ear-piece.

The spring steel headband is covered with leather and is provided with a hinge, so that it may be swung backward. It is so constructed that it will not catch in the hair of the operator.

It is impossible for the operator to get a shock from this receiver, as there are no exposed metal parts, which will make contact with the head.

THE CORD TERMINALS are so constructed that standard cord tips can be used on receiver cord, and be practically concealed. This construction absolutely prevents a short circuit in the receiver. Cords can be securely attached or removed without opening the case.

The six semi-circular MAGNETS are supported by the case from the back and sides. They are made of special magnet steel, and retain their magnetism indefinitely.

The two Norway iron POLE PIECES are also supported by the case

THE MAGNET COILS are wound to 60 ohms resistance.

THE DIAPHRAGM is made of ferro-type metal.

THE ADJUSTMENT is made permanent by the general construction of the receiver.

THE OPERATOR'S CUT-IN JACK is very compact in design and does not interfere with apparatus mounted on the keyshelf. The springs of German silver are platinum pointed, U-shaped and are of good length without making the jack long.

THE CUT-IN PLUG is very short, and does not protude from the face of the keyshelf to interfere with the operator. The handle is of hard rubber; the tip and sleeve contact of brass.

This receiver is furnished with a 72-inch two-conductor green silk cord.

For switchboard work it is the most successful compact receiver on the market to-day.

Write for "Bulletin No. 9A," which completely describes our Magneto Switchboards.

BRANCH OFFICES:

PHILADELPHIA, PA.	CLEVELAND, O.	KANSAS CITY, MO.	LOS ANGELES, CAL.
Keystone Tel. Bldg.	Electric Bldg.	1413 Main St.	318 W. Second St.

KELLOGG SWITCHBOARD & SUPPLY COMPANY
CHICAGO, ILLINOIS, U.S.A.

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Sioux Falls

South Dakota Branch

300-302-304 NORTH PHILLIPS AVENUE

On and after February 1st we will make shipments from above named point. We will carry in stock a complete line of Telephones and Tele-phone Line Material, Wire Insulators, Cross Arms, Brackets, etc., etc., and all orders will be shipped same day they are received, insuring quick delivery and a con-siderable saving in freight charges. The establishment of this branch, together with our branch at Kansas City, Mo., places us in a better position to care for your wants than any other concern. We are now shipping two car-loads of telephones and supplies per week from Kansas City branch, will soon be shipping that amount or more from Sioux Falls branch. The Reason: prompt deliv-ery, correct prices and a product that is abso-lutely unequaled.

It will prove interesting to you if you will allow us to submit our 1907 proposition.

Address Nearest Office

Swedish-American Telephone Company

KANSAS CITY, MO.
115 WEST SIXTH STREET

Chicago

SIOUX FALLS, S. D.
300-302-304 NO. PHILLIPS AVENUE

You Wouldn't Start a Horse Car Line

in this age of electric cars? Not if you wanted to make money out of the business of transportation.

Then why should you start a manual telephone exchange in this age of automatics, if you want to make money out of the telephone business?

The automatic system of telephony bears the same relation to the manual system that the electric car does to the horse car. It is the apotheosis of telephone development, as the electric car is of transportation development.

The automatic telephone system produces the best service more economically than indifferent service can be produced with manual equipment.

There is no more question as to the relative popularity of the automatic and manual telephone service where the two kinds are in competition than there is as to the relative popularity of the trolley car and the horse car.

And, as for the securities—the same comparison may be applied with the same results.

Our Automatic system has been adopted in the following cities:

Aberdeen, S. D.
Akron, Ohio.
Albuquerque, N. M.
Allentown, Pa.
Auburn, Me.
Auburn, N. Y.
Battle Creek, Mich.
Bellingham, Wash.
Berlin, Germany.
Buxton, Iowa.
Cadillac, Mich.
Champaign, Ill.
Chicago, Ill.
Clayton, Mo.
Cleburne, Texas.
Columbus, Ga.
Columbus, Ohio.
Dayton, Ohio.
El Paso, Texas.
Fall River, Mass.
Ferguson, Mo.
Grand Rapids, Mich.
Hastings, Neb.
Havana, Cuba.
Hazleton, Pa.
Hopkinsville, Ky.
Jonesboro, Ark.
Lake Benton, Minn.
Lewiston, Me.
Lincoln, Neb.
Los Angeles, Cal.
Manchester, Iowa.
Marianao, Cuba.
Marion, Ind.
Medford, Wis.
Miamisburg, Ohio.
Mount Olive, Ill.
New Bedford, Mass.
Oakland, Cal.
Ocean Park, Cal.
Pentwater, Mich.
Portland, Me.
Portland, Ore.
Princeton, N. J.
Richmond, Ind.
Riverside, Cal.
San Diego, Cal.
San Francisco, Cal.
Santa Monica, Cal.
Sioux City, Iowa.
South Bend, Ind.
Spokane, Wash.
Springfield, Mo.
St. Marys, Ohio.
Tacoma, Wash.
Toronto Jct., Can.
Traverse City, Mich.
Urbana, Ill.
Van Wert, Ohio.
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Watch Hill, R. I.
Wausau, Wis.
Westerly, R. I.
Wilmington, Del.
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AUTOMATIC ELECTRIC COMPANY, VAN BUREN and MORGAN STS. CHICAGO U. S. A.

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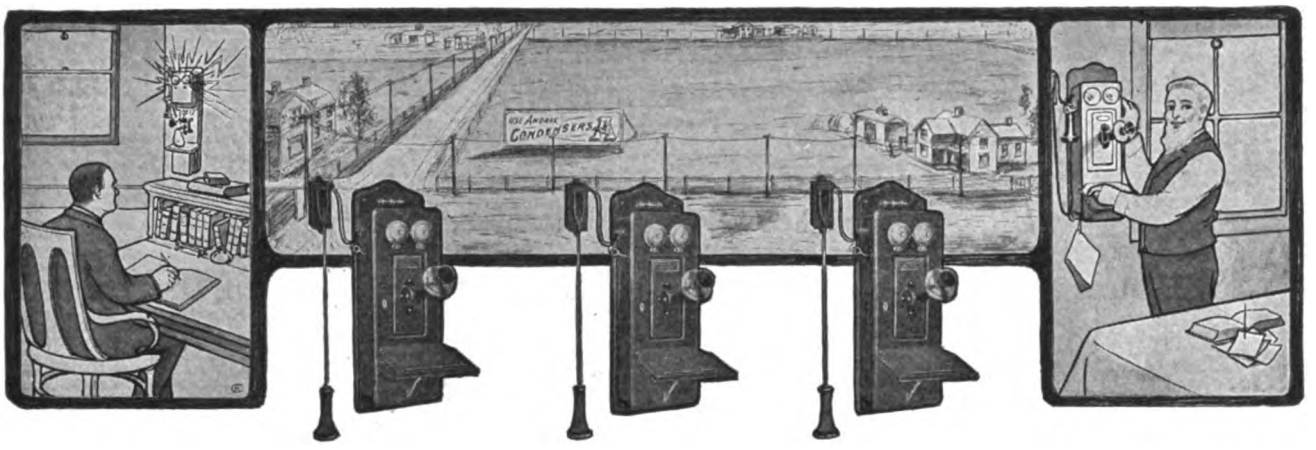

"RUBBERING" CANNOT CRIPPLE THE SERVICE

There's one practical way to maintain good service even though a dozen "rubberers" have their receivers off the hooks. It's the Andrae way. The

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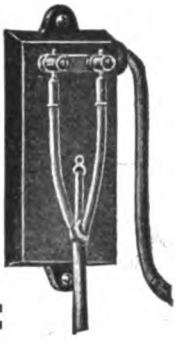

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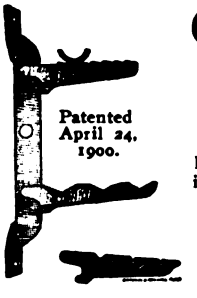

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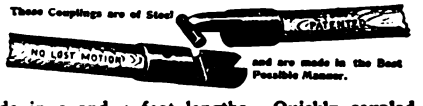

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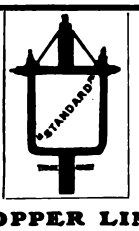

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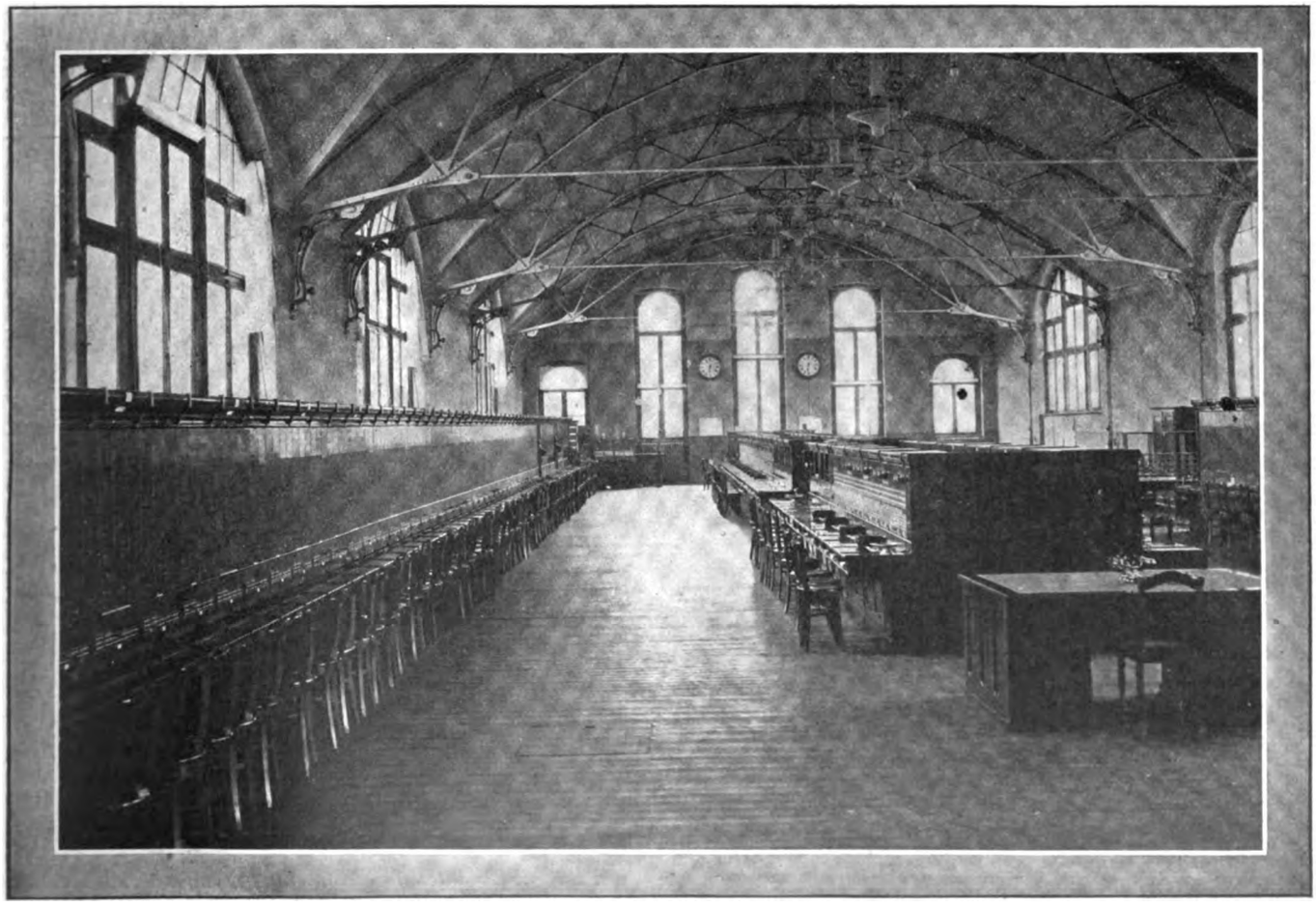
Mammoth New Telephone Switchboards at Leipzig, Germany

By Dr. Alfred Gradenwitz.

With a capacity for 20,000 subscribers' lines and 500 toll lines, and equipment already installed which allows for the use of 14,940 local and 224 toll lines, the new telephone exchange at Leipzig is one of the largest of the modern offices in the German Empire. The switchboard is widely different from the horizontal and other types which for a long time were so extensively used in Germany, the influence of American practice being plainly evident. The board is of the familiar multiple type. There are twenty-eight three-position local sections. Nineteen of these are set apart for flat rate service and the remainder are used for measured service business. Each flat rate operator's position is equipped for 120 lines. As the rate of calling on the measured service positions is much lower, an operator can handle many more lines, and equipment for 300 lines is provided at each position. Lamp signals are used in connection with the lines, being associated with the answering jacks in the customary manner for common battery switchboards. Cord circuits are each provided with two supervisory lamps, mounted in the keyboard. The relays for controlling these supervisory lamps are mounted in the regular way at the rear of the switchboard sections.

The long distance boards are in the same room with the subscribers' board. They are set up in the middle of the hall, and are well lighted from the high windows. The sections are set in two rows with their backs turned toward the centre of the room. A passage between them allows the employees to obtain access to the sections for the making of repairs. Each toll position is equipped for handling four lines.

The toll plant includes not only the 28 two position line sections, but also nine "ordering" sections and one distributing board. The distributing board is used for the preliminary handling of requests for long distance lines. When a subscriber calls for a long distance connection he is immediately switched to this board by his local operator. At the distributing board his line is immediately connected through to an idle operator at an "ordering" position. Here the operator takes the details of his call, and sees that they are transmitted to the proper line operator at the toll board. This operator obtains the desired person at the



Switchboards for Handling Toll and Local Business in the New Leipzig [illegible]change.

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distant exchange, and has the connection completed back through the local board. The use of the distributing board effects a considerable saving in time, as the subscriber does not have to wait for an operator to finish handling another call before answering him. It also insures a regular distribution of calls among the operators at the "ordering" or recording positions.

The entire operating room was designed to give a maximum of daylight upon the switchboard. Such space as is not actually taken up by the sections is clear of obstructions, and the grouping is such as to make the open spaces between the different classes of boards as large and uniform in size as possible. The desks of the supervising operators are so placed as to give a clear view of such portions of the room as they should see for the proper performance of their work, without interfering with extensions of the lines of sections which will become necessary in the future. The operating room has a high vaulted ceiling, giving plenty of air space, thus insuring good ventilation.

HOW THE SOUTH DAKOTA TELEPHONE ASSOCIATION WAS MADE INDEPENDENT.

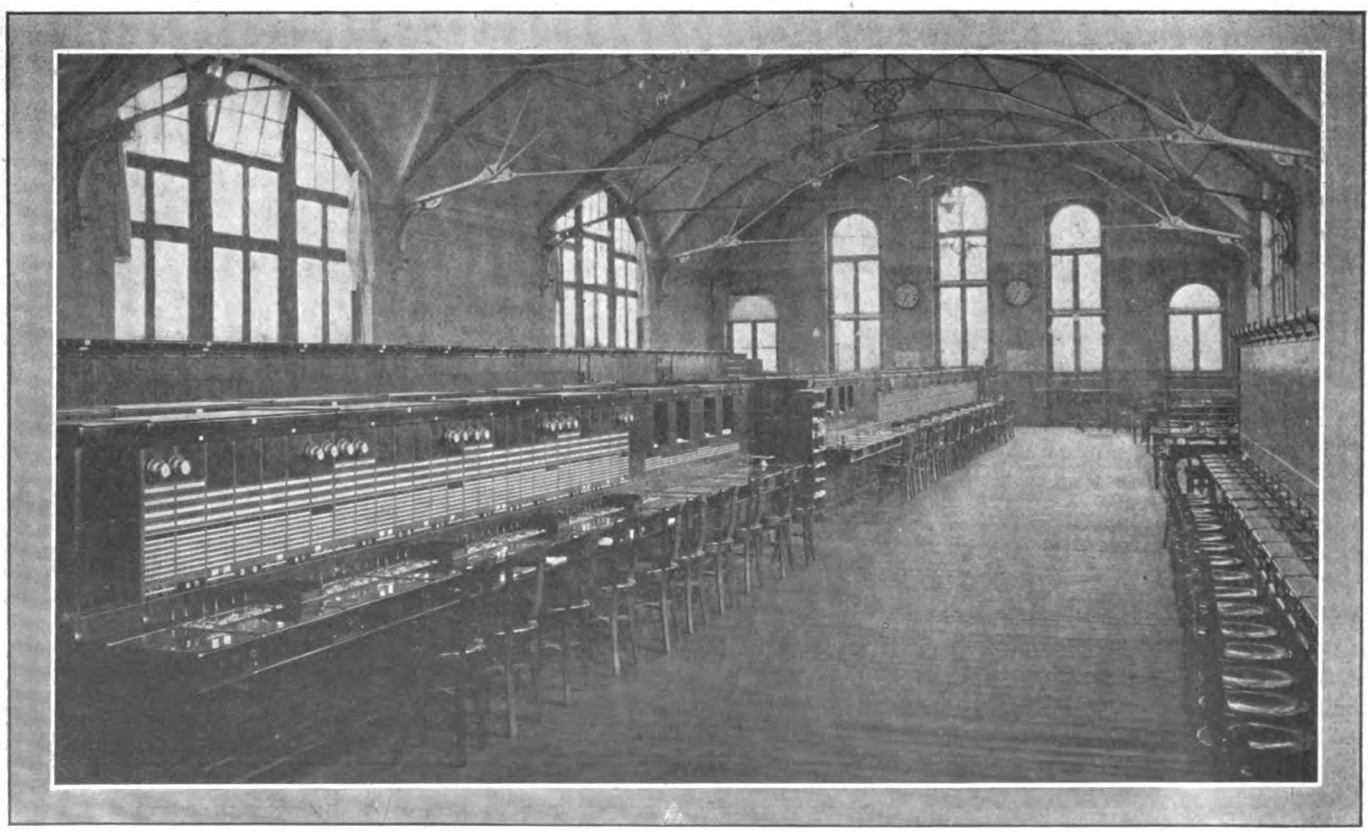
GEORGE T. HEWES, of Des Moines, Ia., who went to the recent South Dakota Telephone Convention to tell about his work in building up the clearing house in his State, relates in a very interesting manner some of the events which particularly attracted his attention as a sound Independent telephone man.

When he first entered the Cataract Hotel at Sioux Falls he was somewhat surprised to see "Blue Bells" suspended in all sorts of prominent locations. This was not so remarkable as it would be in many States, however, as in South Dakota the preceding three conventions had been largely attended and dominated by Bell interests. On January 8 the first indication that this fourth meeting was to be different from the others presented itself in the appearance of the Shield conspicuously placed on the side of his dress suit case. The emblem received such a good reception that other people began to bring it into evidence, and stickers soon appeared on the hotel register and in other prominent places. The resemblance of the Shield to the American flag suggested that the proper sentiment towards all those who were disposed to antagonize it would be the old adage, "If any one attempts to pull down the American flag, shoot him on the spot." On the second day of the convention the Shield appeared conspicuously above the "Blue Bell" in several prominent places, and there it stayed during the remainder of the convention.

When the delegates entered the dining room for breakfast they found the waitresses liberally supplied with Bell decorations. It did not take the Independent men long to obliterate these unfriendly signs with their stickers in a way which caused considerable amusement. When the convention was called to order every Independent delegate and every representative of a manufacturer or supply house wore a Shield.

During the progress of the convention Mr. J. L. W. Zeitlow, of Aberdeen, brought up the question whether all telephone men were entitled to seats in the convention, with a voice in its doings. He was answered by Mr. Geo. W. Burnside, of the Citizens' Telephone Company, Sioux Falls, who said that while there might be nothing on the books of the association to prevent representatives of other than Independent telephone companies from becoming members, it was his understanding that the organization was for Independent telephone men only. Mr. Burnside then moved that the convention should recognize no representative of the Bell telephone company, or any company allied with it. This motion was carried without a dissenting vote. The final step in the overthrow of the predominant influence of the Bell companies in this association was the changing of the name from the South Dakota Telephone Association to the South Dakota Independent Telephone Association. The Bell people who were present were so thoroughly cowed by this time that there was not a dissenting vote.

At the close of the meeting there was a little excitement when the final question was raised as to whether or not representatives of Bell telephone companies should be allowed to join at the banquet, and in fact when somebody proposed that the employees of the local Bell exchange should be invited the commotion became intense. It was finally decided that although the Bell people would not be allowed to take any part in the proceedings, there would be no harm in allowing them to come and take a little nourishment as the guests of the Independents. The real Independents are growing so rapidly that they can afford to be generous.



View of Operating Room in the New Exchange at Leipzig. With the Toll Board in the Foreground.

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Toll Line Construction*

By S. A. Hensley,

Superintendent Western Telephone Co., Lincoln, Neb.

TOLL lines must not be only so constructed, mechanically and electrically, as to carry properly the talking current, but also be so distributed as to afford at a minimum expense of material, labor and maintenance, access to all points to which access is desired. In the most advanced practice the location of the business and its probable growth are determined beforehand as accurately as possible, and the distribution of toll lines is made from this data. In this way the work of toll line construction can be pushed in advance of daily needs. The largest companies should plan toll line requirements for two, three or five years in advance of actual traffic requirements. Under these conditions the toll lines are built to pre-determined points.

Before constructing a toll line, the first work is to determine the most feasible route to be followed; in doing this a great many factors have to be taken into consideration. In general the shortest route should be selected. However, the nature of the ground, soil, hills and hollows, creeks, etc., and also the number of trees and other obstacles which would interfere with the line should not be overlooked.

There is another factor which is far more important than deciding the course of a pole line, and it is one which does not lend itself to any mathematical solution; that is the right of way. Before the pole line can be built on a road or public thoroughfare, the consent of the property owners along the road must be obtained, or a franchise from the town or city must be secured. In the majority of cases, particularly in the small towns and in the country, both must be obtained. The right-of-way permits should also include the right to trim any and all trees that may protrude through the line. The route to be selected is the best one, according to the above considerations, along which a right-of-way can be obtained.

Prior to commencing any construction each foreman should be supplied with blue prints and maps showing the locations of all rights-of-way. The maps and contracts should be sufficiently explicit in the descriptions of the locations of all poles, guys or other attachments to enable the foreman to proceed with the construction without hesitation or difficulty. Of course it is understood that the foremen are to be thoroughly experienced and competent men.

Looked at from a standpoint of construction, toll lines are all included in a single class, *i. e.;* open or aerial wire lines. The pole is the most important feature of the open wire construction, and since it has to bear the load of the wire under all conditions it is essential that the wood used be selected with the utmost care. Whatever kind of wood is selected, it should be the very best material and inspected by a thorough and competent inspector. The size of the pole required will depend on the number of wires to be carried and on the height of obstacles, if any, to be overcome.

Many attempts have been made, with more or less success, to treat poles artificially, so as to protect them against the action of the weather. The general practice is to paint the pole thoroughly after it has been placed. This does very well for appearance in towns and cities, but it has been found wanting as a means of preserving the pole, as the water will enter the cracks in the pole and cause what is known as "dry rot." It has been found by experience that unpainted poles are the longer lived. The point at which the pole is most liable to decay is at the surface of the ground. This is because at this point the action of the dampness in the ground and in the air is greatest. Various methods have been devised for protecting poles at this point, such as a coat of tar; but the general practice to-day is to depend altogether upon paint, and the treating with Carbolineum Avenarius. This method is in general use by the government and all Eastern toll line companies, and has been found to prolong the life of poles from six to ten years.

The cross arm is next in importance to the pole, and the utmost care should be taken in the selection of material and the design for its construction. The pins used in telephone work are made of several different kinds of wood, and are divided into two classes, standard pins and transposition pins. Standard pins are those used in the general construction of a pole line, and transposition pins are used for transpositions only.

For insulators, with the exception of that portion of the line known as the "drop line," the material commonly used is glass. Porcelain has some advantages over glass as a material for making insulators, and on the other hand, glass possesses some advantages over porcelain. Porcelain is more expensive than glass and its glazed surface soon becomes cracked under the influence of the cold, thus allowing rain to soak into the interior portion and greatly reduce the insulating power. Glass, however, possesses one peculiar advantage over porcelain: cocoons and spider webs are much less likely to form on glass, because glass is transparent and does not offer the shade that seems to be desired by worms and spiders. If spider webs and cocoons form on a line, in any great number, they cause the line to become heavy and partially grounded, as the case may be, as it has been found by experience that the spider's web is a conductor.

The greatest care should be exercised in stringing wire of any kind. Care should be taken not to put any nicks or kinks in it or injure it in any way, so as to weaken the wire. Copper wire, especially when being tied to the insulator or in making the connection, should be handled with extreme care; no pliers or tie wrenches should be used. Half copper sleeves should be used in dead ending all copper wire, and whole copper sleeves for making all joint connections.

The heavier wires should always be strung on the middle pins of the cross arms and the lighter wires on the end pins. All wires should keep the same position on the cross arms from the starting to the terminating points.

The condition of the weather should be watched very closely when stringing wire and the proper sag between the same should be given. By doing this a great deal of trouble is avoided, as to breakage and slack wires.

It is a well-known fact following the laws of self and mutual induction, that if two wires are placed parallel to each other an alternating current flowing on one wire will induce similar and opposite currents on the other. If the telephone circuit is metallic and the disturbing wire is placed so as to be at equal distances from the two conductors of the telephone circuit, no induced current will be produced in the latter, since if the disturbing wire has a positive charge at any time, the surfaces of the two telephone conductors nearest to it will have a negative charge, while those remote will have a positive. As the charge of the disturbing wire changes to negative, that on the adjacent surfaces will change to positive, and that on the remote surfaces will become negative. Since the telephone circuit is not grounded, it is obvious that the only way for this charge to take place is by the current flowing across the wire, which produces no noise. When the two conductors on the telephone circuit are at equal distances from the disturbing wire, a different condition prevails. At the instant a disturbing wire receives a negative charge, the positive charge is induced on the adjacent surfaces of the nearest telephone conductor. The negative charge being repelled to the remote conductor causes a flow of current from one end toward the other, with a resultant noise in the receivers. It will now be apparent that if two metallic telephone lines are placed side by side and the conductors of the circuits are not disposed symmetrically with respect to each other, cross-talk

*Abstract from an address delivered at the convention of the Nebraska Independent Telephone Association.

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will be the result. This condition is overcome by transposing the conductors of the telephone circuits at certain intervals. This process is called transposition, and is resorted to on all open wire lines to prevent cross-talk and other disturbances. Quite an elaborate scheme has been worked out for the transposing of conductors on lines carrying several cross arms. On toll line leads, where subscribers' lines parallel the toll lines, it is most essential that all the lines should be transposed according to the specification code. The writer's experience has shown that as much attention must be paid to the transposing of lines as to the proper stringing of the wire and building of the lead. No two wires of equal length will have the same resistance, and if a line is not transposed this will cause what is known as an unbalanced line, which in fact is a noisy line. By cutting in transpositions the circuits are balanced to give the same resistance on each of the wires, giving a perfect toll line circuit.

There has been worked out, very successfully, what is known as a "phantom circuit." By transposing any two parallel toll circuits so as to balance the two lines which are to be used, the two lines may be made into three distinct and complete telephone circuits. The station ends of the line will be provided with an approved repeating coil, which is necessary to complete a phantom circuit.

One of the most important features in cutting transpositions is to know how to do the work. As an example in cutting in a transposition if one should throw the left hand wire over the right, and at the next transposition throw the left hand wire under the right hand wire, he would have no transposition at all.

In cutting transpositions, one should make it a rule to throw the left hand wire over the right no matter which way you are going, or at which end you begin to string the wire; your wires will all be transposed after completing the line. In reality it takes three transpositions to make one complete transposition turn. By this is meant that in three transpositions one wire makes a complete turn around the other. If the wire could be taken out over the pole and twisted up into a space of three inches, the wires would be twisted into a rope three inches long. It makes no difference at which end of the circuit one starts stringing the wire, he must transpose on the same letter all the way through the lead.

The Proper Equipment of the Local Exchange*

By J. L. W. Zietlow.

MUCH could be said about the various appliances used in an exchange room and the merits of different makes of apparatus brought out, but it is not my purpose to handle the matter in this manner. The size of the exchange, the natural growth or future requirements should be well considered in ordering a new switchboard. In most cases it would be economy to start with at least a hundred number cabinet, even though only twenty-five or thirty drops were to be installed therein. Such a board should be equipped with at least six cord circuits, including double position ringing and listening keys, thus enabling the operators to ring on either end of the line without changing plugs, as well as to listen and to cut in a repeating coil if necessary.

I say at least six cord circuits—ten is even better, because in a small exchange it is very difficult for an ordinary lineman to give the cord circuits as well as the ringing and listening key the proper attention. It is better to defer repairing them, provided there are enough extra ones to avoid tying up the exchange, until it is economical to send for an experienced switchboard man. Naturally a switchboard should be provided with all modern attachments necessary to render good service. This includes night bell circuits and adjustable transmitter and head receiver.

If the exchange is small and party lines and rural lines are used, combination drops and bells should be used for this purpose. But where an exchange is large enough to require the constant attention of an operator these should be eliminated, as they cause a great deal of confusion when receiving calls, etc. Eighty or hundred ohm drops should be used for all series work, but for heavy party or farm lines one thousand ohm drops are preferable. Selective ringing and even lock-out attachments are a good thing, provided there is competent help to care for them. One of the most difficult things is to impress on the operator or the average lineman the necessity of using a repeating coil where grounded and metallic lines are connected.

To obviate this trouble it might be well to use a different size jack and plugs for the metallic lines and grounded lines. By equipping certain cord circuits with repeating coils and terminating such cord circuits on the different kinds of plugs, no call could be answered by using the wrong cord or plug. If this were followed out a great deal of cross talk and poor service would be eliminated. Strange as it may seem, most of the operators as well as the ordinary linemen imagine that because they can hear nicely on a metallic and also on a grounded line without using a repeating coil, that one is simply asking them to do something which is not necessary. They do not realize that by disregarding the use of repeating coils they are causing an endless lot of trouble and poor service on the terminal end of the line.

The switchboard should be properly cabled to a distributing board, which for small exchanges can be set up in connection with the ordinary carbon block and fuse board. In fact, it is all that is necessary in any exchange where there is no danger from electric light or power currents, and would apply to most of the exchanges in this western country, as but very few towns have any electric light and power circuits. Where the latter exist heat coils should be used, thus guarding against sneak and other foreign currents.

Where toll lines are handled in connection with the ordinary exchange, timing devices as well as facilities for handling toll records should be provided. When the exchange room is used for a public toll station, proper railing or counters should be provided to prevent the public from encroaching upon the space needed by the operator in the performance of her duty, as well as to prevent meddlesome people from interfering with the apparatus. Magneto systems and trunking devices are sufficient until five hundred subscribers are served, and I believe as a rule will give better results than the common battery system. This statement will, no doubt, be questioned by our common battery friends, but it must be borne in mind that the average small exchange cannot afford to employ an expert who is acquainted with all the details of the common battery system, and unless such a system is well cared for it indeed renders very poor service.

In fact, it is a question in my mind whether or not a common battery system can give as good service as the ordinary magneto system, the same outside construction being used in both. The only advantage to be derived from a common battery service in a small exchange is possibly the supervisory or clearing out signals. If lamp supervisories and clearing out signals could be properly used on the magneto board it would be much simpler and cause less annoyance in the small exchange than the common battery system. However, as the number of subscribers increases the common battery and multiple system should be used.

*Abstract from a paper read at the convention of the South Dakota Independent Telephone Association.

OHIO INDEPENDENTS TO MEET AT COLUMBUS ON MARCH 28.

THE members of the Ohio Independent Telephone Association are to meet on Thursday, March 28, at Columbus, O. A large attendance is expected, and it is believed that many prominent telephone men will take an active part in the meeting. The enthusiasm which has been shown in the success of the movement throughout the State has been strong, and will no doubt be much in evidence at the convention.

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Principles of the Telephone*

By Arthur Bessey Smith, Department Telephone Engineering, Purdue University.

EVERY telephone has within it two sets of apparatus, one for signalling and the other for talking. The former is for the purpose of calling attention to a telephone call, and is made in a variety of ways. The talking set has two pieces of apparatus that come to the attention of every telephone user. They are the transmitter, into which a person talks, and the receiver, which is placed against the ear to receive sound from the distant station. The transmitter, Fig. 1, is constructed of a diaphragm, *D*, usually of aluminum, held in a case by some means not shown in the figure. Attached to the center of the diaphragm is a light brass bolt which runs to the center of an auxiliary diaphragm, D^1, which is made of mica. This mica diaphragm forms the front cover of a brass cup, which is held in place rigidly by a brass bridge, *B*, secured to the framework of the transmitter. Attached to the back side of the mica diaphragm is a thin disc of polished carbon, *E*, which is the front electrode of the cell. A similar carbon disc, E^1, is attached to the back wall of the brass cup and is called the back electrode. The space between the two is filled with granulated carbon, that is, carbon which has been reduced to very small particles, each of which is very hard and is highly polished. The wires are attached to the transmitter as shown in the figure, entering at the bridge, *B*, and leaving at the front electrode. Thus the path of a current of electricity will be as follows: entering on the bridge, *B*, it will pass through the brass work to the back electrode, E^1, from it to the granulated carbon and through to the front electrode, *E*, from whence it leaves by means of the wire soldered to the brass back of the electrode.

It is a well-known principle of electricity that the resistance of a contact between two conductors depends upon the pressure. A light pressure gives a high resistance, while a heavy pressure produces a low resistance. Within certain limits the resistance may be said to vary inversely with the pressure. It is upon this principle that the transmitter acts. Suppose the transmitter diaphragm to be quiet, and a battery to be connected to the wires. Then a perfectly steady current will flow through it. If now sound waves are allowed to impinge on the diaphragm, they will set it into vibration, and the motion of the metal will be an exact reproduction of the motion of the particles of air which constitute the sound wave. Since the mica diaphragm, D^1, is connected to the center of the main diaphragm, *D*, the former will share the motion of the latter, and there will result a varying

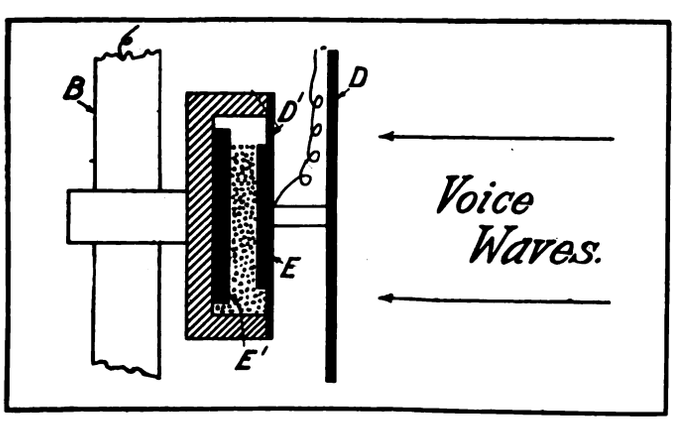

Fig. 1. Simplified diagram showing arrangement of transmitter parts.

pressure on the granulated carbon between the two electrodes. As the pressure rises, the resistance between granules will fall, and as the pressure falls the resistance will rise. Since the voltage in the transmitter circuit is constant, any change of resistance will affect the current. A lowering of resistance will cause an increase of current flow, while an increase of resistance will cause the current to fall. In this way the sound waves in air are enabled to regulate the strength of the battery current flowing in the transmitter, and cause it to undulate in exactly the same manner that the sound waves do.

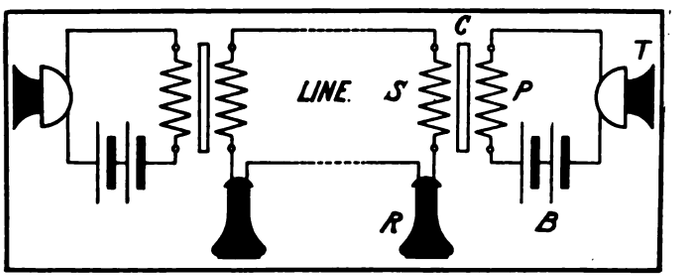

Fig. 2. Simplified diagram of direct line between two telephones equipped with induction coils.

Keeping this action of the transmitter clearly in mind, we will show how it is combined with the rest of the apparatus in sending speech. In Fig. 2 the essential parts of the talking set of a local battery telephone are shown. This is the kind of telephone which requires a crank on the box, to be turned to call central. Each instrument of this variety carries its own battery, which fact gives it the name.

The transmitter, *T*, is connected in series with the battery, *B*, and the primary winding, *P*, of the induction coil. This is called the primary circuit. The construction of the coil is as follows: On a soft iron core, *C*, made of a bundle of fine iron wires, is wound some rather coarse copper wire, insulated, in three or four layers. On top of this is wound a quantity of fine wire, hundreds of turns in number. The resistance of the primary is from half an ohm to 1½ ohms. The secondary winding varies from 20 to 40 ohms, with occasionally a case as high as 250 ohms. As shown in the figure, the secondary is connected in series with the receiver, and thence through wires to the line and to the distant station. Now consider the primary circuit. As long as the transmitter is quiet, the current will flow steadily. If sound waves strike the diaphragm, it will be set into vibration, which will regulate the flow of current, making it undulate with a wave form exactly like that of the sound. This undulating current in the primary winding of the induction coil induces an alternating voltage in the secondary winding, which causes an alternating current to flow through the receiver, to the line, and to the telephone at the other end of the line.

It will be seen that we are dealing with vibrations of various kinds. First, the motion of air particles; second, motion of the metal diaphragm and its connected parts; third, the varying pressure between the carbon granules, which is capable of being plotted as a vibration as much as any other; fourth, the varying resistance which as a vibration corresponds to the pressure wave; fifth, the undulating primary current; sixth, the varying magnetism in the iron core of the induction coil; seventh, the alternating current in the secondary winding and line, which is reproduced by the receiver at the distant end into motion of air particles, which the ear interprets as sound. In all these vibrations the form of the original sound wave is so accurately retained that the final result is an almost exact reproduction of the spoken word.

The receiver, by means of which the alternating current is translated back into sound, has for its basis a permanent steel magnet of horseshoe form, *M*, Fig. 3. Attached to each end of the steel magnet is a soft iron polepiece, *P*, *P*, around which is wound a coil of fine wire, *C*, *C*. These coils are connected in series with each other so that if a current be passed through them they will act together tending to magnetize or demagnetize the core, depending on the direction of the current. In front

*Abstract from a paper read before the Indiana Engineering Society, Jan. 19, 1907.

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of the ends of the polepieces is a flat diaphragm, *D*, secured at its edges so that there is only a small air space between it and the polepieces. This diaphragm is made of soft iron, and is consequently attracted by the permanent magnet, *M*, so that it is slightly dished. The amount of this dishing is determined by the balance between the elasticity of the diaphragm and the pull of

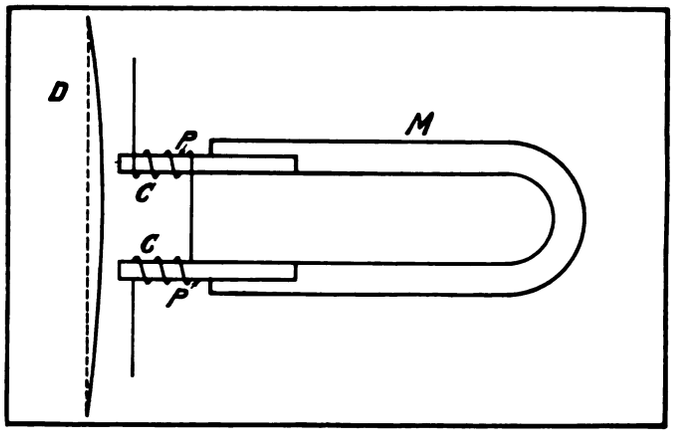

Fig. 3. Diagram showing the essential parts of an ordinary bipolar telephone receiver.

the steel magnet. Now let us see how this combination will act in connection with the circuit just described. The alternating current from the line will traverse the two coils of the receiver, and will of course change its direction of flow many times per second. While the current is flowing in one direction, let us suppose that it tends to strengthen the permanent magnet. This increases the pull on the diaphragm and makes it move toward the polepieces. As the current dies away, the diaphragm will return to its original position. When the current reverses and flows in the opposite direction, it will now oppose the permanent magnet, diminish the pull on the diaphragm, and allow it to spring a little farther away from the pole pieces. As this reverse current dies away the strength of the permanent magnet reasserts itself, pulling the diaphragm back to its original position. So for every cycle or complete vibration of the current, the diaphragm will make one complete cycle or vibration. It is this action that reproduces the sound into the air.

The question is often asked, "Why must there be a permanent magnet in the receiver, why would not a soft iron core do as well?" A little consideration will show that the soft iron will be magnetized equally well in both directions by the alternating current. This will produce two motions of the diaphragm toward the magnet and away again for each complete cycle of the current, so that instead of reproducing the waves of current wave for wave, it would make twice as many waves in air as in the current that produced them, thus failing to reproduce the original sound as desired.

One of the important points in transmission is the variation in the contact resistance of the transmitter. The exact range of the variation has been unknown, as no means have been found for measuring so rapidly changing a quantity. It is my good fortune to have been successful recently in measuring with approximate accuracy this resistance change. I have not the time to enter into a detailed account of the apparatus and description of the experiments, but the results are interesting. For a very weak sound the amplitude was about one-half ohm, the total steady resistance of the primary circuit being about 40 ohms. For louder sounds, the steady resistance increased to above 56 ohms, at which point the variation was about 12 ohms. Mathematical calculations are very successfully applied to all branches of engineering, and electrical power is no exception. The engineer can now calculate the entire performance of a dynamo or transformer before it is built. But with the telephone it has not been true. Cut and try methods have of necessity been used. But the time is coming when further improvements must be made, and it is my hope that the mathematics of the telephone may be so developed as to throw important light on present defects and indicate the way to improvement in a great many important matters

Among the parts of the signalling apparatus the bell is perhaps the best example of the neat application of electrical principles. Various types of bells have been used for calling, most of them being of the battery bell type, such as is used at the present time very largely for door bells, call bells, hotel calls, etc. As these bells all depend for their operation on the making and breaking of a contact which carries the current that energizes the magnets, they are not well suited for ringing over long lines. Battery power enough to ring them can be supplied, but the terrific sparking soon wears them out and causes endless trouble. These bells are therefore impractical for commercial telephone lines.

The polarized magneto bell has been found to be admirably adapted for the purpose, and is now universally used. It consists of an electromagnet, *S-N*, Fig 4, whose core is of soft iron, wound with insulated copper wire. Pivoted in front of the ends of the electromagnet is a soft iron armature, *n-n'*, to which is attached the clapper rod, which plays between the two gongs, *G-G*. The armature is magnetized by a permanent steel magnet *N*, only one end of which is shown in the figure. Owing to its position, this permanent magnet will magnetize the armature in a peculiar manner, giving the middle a south polarity, while both ends will be north.

Suppose the armature to be in the position shown in the figure and that the current is passing through the coils in the direction arrowed. The left pole of the electro-magnet will be south and the right pole north. Under these conditions, following the law "like poles repel, unlike poles attract," the armature will be forced down at the right end and up at the left, causing one blow on the right gong. If the current through the coils of the electro-magnet is reversed, the polarity of its magnetism will be reversed, making the left pole north and the right south. This will cause a repulsion at the left and an attraction at the right, so that the armature will be forced back into its original position. If the current continues to alternate, the clapper will vibrate indefinitely. The current for ringing this type of bell is furnished by a small alternating current dinamo ordinarily run by a motor which derives its power from the city lighting cir-

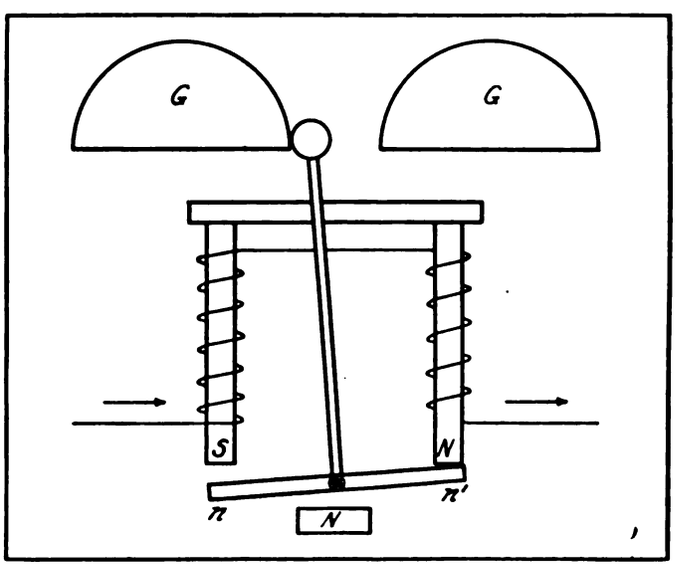

Fig. 4. General form of telephone bell to be rung by alternating currents, showing magnetic circuit.

cuits. As any form of alternating current will do, however, arrangements are frequently made for ringing these bells from batteries by means of a pole changer.

For signalling over long lines this bell is admirably suited. There are no contacts to spark or corrode and no springs to get out of adjustment. The current required is quite small, so that it is adapted to party line service.

(To Be Continued.)

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QUERIES

PARTY LINE RINGING OVER TRUNK LINE.—(822.)

In a Bell exchange in our city the toll board is connected with the local board by a trunk line. Selective party line service is given, and I am told that only the local board is equipped with party line keys. At the same time they also tell me that the operator at the toll board rings any party she wishes to in the town. Will you please explain how this could be?

R. B.

FIG. 822 shows portions of a trunk circuit which is probably like the one you mention, and will enable you to understand how a toll operator can ring any party, even though the party line keys are located only at the trunk position on a board equipped with subscribers' multiple jacks. With each trunk is associated a party line key, which has connections for ringing the four parties by means of pulsating current, also for "straight" ringing on a metallic line with alternating current. The depression of one key lever rings on the "ring" side of the line with negative pulsating current to ground; the next key rings with positive pulsating current to ground on the same side of the line; the third with negative pulsating current on the opposite or "tip" side of the line, and the fourth with positive pulsating current on the "tip" side of the line. If no key is depressed the ringing current which, under proper conditions, goes out on the line, is alternating and adapted to ring a bridged bell.

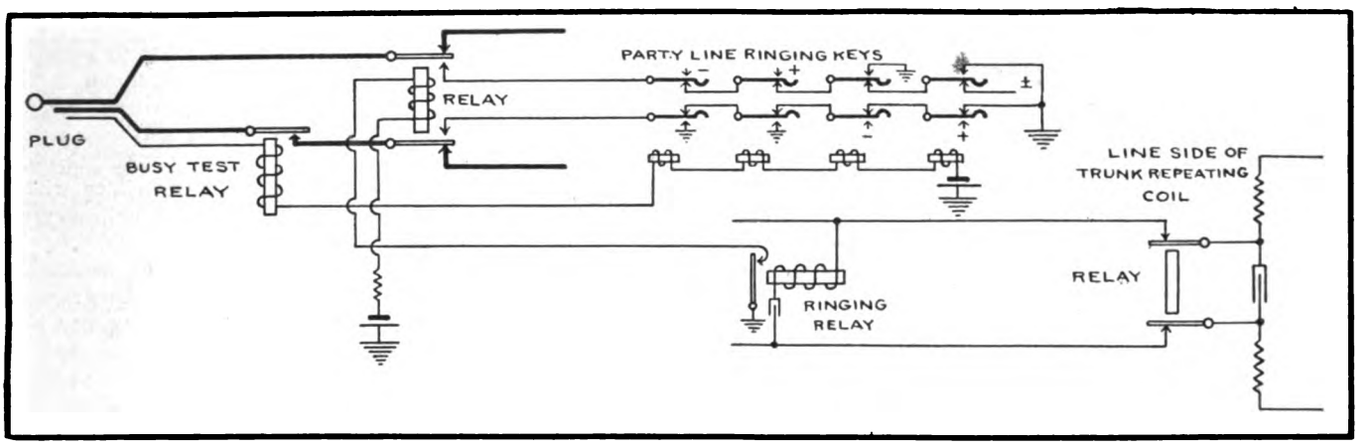

Fig. 822.

When the trunk plug is inserted in the multiple jack, one of the plungers on the party line ringing key is depressed, and it is locked in position. This locking is done by a special locking coil, one of which is associated with each plunger. This coil controls a small electromagnet mounted in such a way that an armature piece on the plunger of the key is brought opposite its poles when the plunger is depressed. The magnetic attraction between the core and the armature is sufficiently strong to hold the plunger in place against the tension of its spring while the coil is energized. This energization is effected through the sleeve circuit. The connection of the coils in series to negative battery is shown, and the circuit is completed through the busy test relay, sleeve of the plug, sleeve of the multiple jack, and 30 ohms resistance of the cut-off relay associated with the line to the grounded side of the battery.

When the operator receives over the order wire a call for a certain station on a party line, she inserts her plug, and repeats back the number of the trunk to the toll operator, and the toll operator plugs into a corresponding trunk jack at her position. In the meantime the local operator has depressed the plunger, thus setting the key for ringing the subscriber with the desired current.

Up to this time it will be seen that although the key has been set the ringing current cannot pass out to the line owing to the fact that the key is not connected to the line strands of the trunk cord. This connection is brought about by the operation of a relay, the armatures of which are connected in line strands in the manner shown. This relay is controlled by a second relay, which is adapted to be operated by ringing current from the toll positions. It is connected in series with a condenser, and bridged across a pair of leads carried to the side of the trunk repeating coil, which is connected into the trunk line circuit leading to the toll board in the manner shown in the diagram. When the toll operator rings, the armature of this relay is drawn up, grounding one side of the relay, which has its armatures connected into the local end of the trunk. As the other end of the winding of this relay is permanently connected to negative battery through proper resistance, the operation of the alternating current coil causes it to draw up its armature and allow the ringing current of a proper sign to pass out over one side of the line while the other side is grounded to provide a return path from the grounded bell.

The alternating current relay is constructed with a very heavy armature, which is so balanced that its mechanical inertia is too great to allow it to fall back during the brief interval when the relay is not thoroughly energized, owing to the reversal of current in its winding corresponding to the alternations of the generator thrown on the circuit by the toll operator. As soon as the toll operator releases her ringing key, however, this armature falls back, the relay controlling the springs connected into the trunk line circuit is de-energized, and the ringing current is disconnected from the line strands of the trunk. Owing to the fact that the party line key is maintained in its locked position, the toll operator may ring as many times as she wishes. It is thus seen that once the key is set she has absolute control over the ringing, and may call a subscriber as many times as she wishes by simply operating her ringing key.

CODE FOR RURAL LINE CALLS.—(823.)

Will your readers kindly give the best method for arranging rural line calls, that is, so that directory number will indicate line and ring?

THE AMERICAN TELEPHONE JOURNAL will be glad to have subscribers who have devised satisfactory codes for this purpose which cover heavily loaded rural lines send in descriptions of them. So many different codes have been devised that many subscribers will probably be interested in seeing some of them published, in order that they may have an opportunity to compare their merits. We would suggest that managers send in these codes as soon as possible. Payment will be made for such contributions as are published.

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THE EDITOR'S PAGE

TECHNICALITIES THE REFUGE OF EMPLOYERS' LIABILITY COMPANIES.

THE desire of employers' liability companies to take business where there is no risk, to get out of it as soon as any risk appears, and to take refuge behind any trfling technicality in order to avoid meeting their just liability incurred under their policies is again illustrated in a suit that the People's Home Telephone Company, of Birmingham, Alabama, has been compelled to bring against the Ocean Accident and Guaranty Company. The policy had been in force only about four days when the accident in the case happened, and immediately upon notice of the accident, the guaranty company cancelled the policy, which it had a right to do, if it so desired; this act, however, showed its disposition to avoid all possible risks. The case has not yet come to trial, but it is understood that the guaranty company bases its defense on the following technicality: According to a city ordinance of Birmingham, the telephone company's wires are required to be a certain height above the ground. A severe electrical storm caused one of the wires to be burned off, and fall over a guy wire, and hang there, about ten feet in the air. A few hours afterwards, a boy came along, and seeing the wire, proceeded to pull it down with a stick, thus pulling it across a trolley wire, and burned himself. The guaranty company contends that the telephone company violated a city ordinance in permitting this wire to be below the required height, even for this few hours, there being a clause in the policy stating in effect that the insurance company is not to be liable where the insured violates an ordinance of which he has knowledge. The telephone company was obliged to pay $5,000 damages besides $250 expenses in defending the suit brought by the injured boy, and this it asks the guaranty company to reimburse. It remains to be seen what stock the courts will take in a defense of this kind.

FAIR GAME FOR THE PRESS AGENT.

ONE of the companies whose financial difficulties have been spread in reports through dozens of cities in an effort to discredit Independent telephone securities is the Orr Telephone Company, of Buffalo, N. Y. The decision of a referee denying the claim of the Rev. Francis J. Orr against the trustee of the Orr Telephone Company, in regard to the ownership of certain machinery and personal property, recalls to mind the rather interesting history of this much advertised concern. Originally this Rev. Francis J. Orr was the owner of patents on a new receiver which it was claimed would revolutionize the business of the country. In 1901 the Orr Telephone Company was organized with an authorized capital of $3,000,000. It bought the receiver patents, and the consideration named was $2,600,000. The inventions did not appeal to any of the large telephone companies, and an expert witness has testified that they were not worth more than $250. Immense stock jobbing operations were carried on for a time and the referee has stated that hundreds of confiding people were duped. When the firm finally went into bankruptcy all the assets that could be found were appraised at about $3,500, while the debts were in the neighborhood of $17,000.

Such are the facts concerning this concern, which has had its name mentioned so many times as "another Independent company which has gone to the wall." It never operated any telephone lines, and never manufactured any goods to be sold in the regular course of trade. Its sole business was to gather in cash for the Rev. Mr. Orr, another gentleman who had been a minister, and an ex-army officer who apparently associated on equal terms with his fellows who had fitted themselves for their duties while preaching from the pulpit.

That it should hold up such a concern as this as a sample of the Independent telephone companies throughout the country shows the weakness of the Bell press bureau. The real Independent companies, which are actually operating, doing an obviously successful business with substantial and visible assets, have got beyond the necessity of fearing the effects of such bits of misinformation.

LOADING UP THE RURAL LINES.

FARMERS are not always satisfied with the kind of service that pleases the city telephone subscriber. There are a good many communities where the long party line is thought to be the finest thing that could be built. A man who operates a fairly large telephone system in New Hampshire tells of one old gentleman who was on a line that had been gradually extended from one farm to another until it carried twenty-nine parties. Quite a number of these people were summer residents, who had come from cities where short rings and no "rubbering" were the rule, and they objected to the service they were getting. As a compromise measure a new line was run to take twelve of the instruments, leaving seventeen on the old number. This seemed to please nearly all, but this one particular old subscriber came in a few days later with a grievance. As he put it, "Before you changed that line over I had twenty-eight telephones right under my thumb. As 'tis now if Georgie here is selling five cents' worth of peppermints I've got to wait until he gets through before I can get those other twelve people." The manager of the company may have thought that the real trouble was that it was rather inconvenient to ask Georgie to connect the lines up for listening purposes, but nevertheless a special switch was put in which allowed the subscriber to cut in on either line.

These long party lines are all right for "visiting," but when a farmer wants to use them for business the question becomes more complicated. Where only four or five lines center at a switching point attendance at the switchboard must necessarily be more or less irregular. The recompense for switching service is not sufficient to make it more important than many other things which come up in the course of a day. If most of the calls are for neighbors, and there is little need of connections to outside points, there is a real advantage, even from a traffic standpoint, in putting on a line as many instruments as it can carry. Economy in building and in operation is possible, and if this economy results in low charges to subscribers it is appreciated by them.

Visiting at the present day is becoming one of the minor things in the usefulness of rural telephones. Business is supplanting the social feature during a large part of the day. The farmer is becoming aware of the value of his time, and objects to wasting it at a telephone. The many long rings required for calling certain parties on a heavily loaded line not only require a constant attitude of watchfulness on the part of the subscriber, but in the aggregate they take a large amount of time. During all this time when the line is being taken up for ringing it is, of course, useless for communication. Transmission is poor, and there can be no privacy on a heavily loaded line. Greed for profits should not be allowed to interfere with giving good service.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

COMPANY CANNOT REQUIRE A CONTRACT FOR ONE YEAR.

We have been having so much trouble with changing telephones for subscribers who have had them put in and kept them for only a few weeks or months at most that we are thinking of establishing a regulation requiring all subscribers to sign a contract for a telephone for one year before we install our instrument. Before taking this up we would like to have your opinion upon the legality of such a regulation. We also would like to know if we may require pre-payment of telephone rental in advance. G. W. A.

A TELEPHONE company may always require its charges to be paid in advance for a reasonable length of time, but there is no authority for a company requiring a year's contract. A telephone company, being a common carrier, is required to serve all who apply, and if one subscriber does not want the telephone for so long a period as another, that is no reason why he should be debarred from the service. It is therefore our opinion that you could not legally establish a regulation that a subscriber must sign a year's contract before you install a telephone. Such a regulation would not be held to be reasonable and would therefore be invalid.

DISCLOSING TELEPHONE MESSAGES.

Has a telephone company got to pay damages if one of its operators tells an outsider what a conversation over a wire was, and the outsider is in that way enabled to take advantage of a subscriber in a business way? In the case we have in mind the operator told a friend of hers what a subscriber had related to another subscriber concerning a contract involving a large amount of grain. The operator's friend was thus enabled to impersonate the other subscriber and obtain money from the first subscriber by false pretences. Subscriber number one is trying to make the company stand for his loss. S. G. M.

THE rule certainly is that it is the duty of a telephone company to refrain from disclosing the contents of a message which it receives for transmission. It is a public duty for such a company to preserve the secrecy of a message delivered to it for transmission, and if it is guilty of a wilful breach of this duty, it will be liable for all damages arising therefrom. We cannot say how far conversation over the wire is a message to be delivered by the telephone company, because it is held in cases of slander that to make a slanderous statement over a telephone amounts to a publication, and it might therefore be contended that a statement by a subscriber over a telephone was intended to be public and occupied a different position from a written or sealed message to be confidentially forwarded. A telephone company might further defend on the ground that the operator had no authority to disclose the message and so the company was not liable for the operator's conduct. A still further defense would be that the damages resulting were not such as would naturally be contemplated from the disclosure of the message because neither party would have the right to assume that any person was going to make fraudulent use of the knowledge thus obtained.

MAN'S TELEPHONE CANNOT BE TAKEN OUT BECAUSE HIS WIFE DOES NOT PAY HER BILLS.

A MISSISSIPPI planter sued the Cumberland Telephone and Telegraph Company for $2,000 damages for wrongfully cutting out his telephone service. His wife kept a store in which the company placed a telephone, the contract being signed by the clerk in the wife's name. The telephone in the residence was installed under a contract signed by the plaintiff himself. The wife sold the store at that time, there being a balance of $3.10 on the store telephone. After returning from a business trip, the plaintiff found his residence telephone removed. He called at the manager's office, tendered rental for the next month and asked to be put back on the line. This the manager declined to do on account of the indebtedness on the store telephone. He was without a telephone three or four months, and in his suit claimed to be damaged in many ways, but said it was difficult to enumerate the exact amounts and the ways in which he was damaged. One of the chief items for which he claimed damages was for having to send a boy to his house with packages instead of placing them on the car and telephoning some one at the house to get them. The jury rendered a verdict for one hundred and fifty dollars. The telephone company's defense was that it thought it was making the contract at the store with the man instead of the wife, but this the Supreme Court of Mississippi held made no difference for the reason that the company was bound to put in a telephone at the store at the request of either the husband or the wife. The court sustained the verdict for the plaintiff and held that the contracts were separate and independent of each other, and because of the failure to pay charges on one telephone, the company had no right to cut out the other. The rule is that the telephone company can only cut out that telephone for which there has been a default in payment. Discussing the matter of damages, the court held that the difficulty the plaintiff had in estimating his damages did not effect the case, as it was for the jury to decide how much he had suffered. Cumberland Tel. & Tel. Co. vs. Hobert, 42 S., 349.

RIGHT OF STATE TO CONTROL CONSTRUCTION.

It is provided in the law of our State (New York), as we understand it, that telephone companies have the right to erect and maintain their lines over the public highways of the State. A bill has now been introduced in the legislature, we think at the instigation of the Bell people, providing what the size and location of poles must be, the height of the wires and the angle at which they shall cross the highway. The regulations of the State in this bill are going to conform to the construction of the Bell people in this section, but do not conform to ours. If this bill goes through we will have to spend considerable money in getting our line up to the requirements, and this will, of course, be a great hardship after just having completed our construction. What bearing does the State law giving us the right to build our lines have upon this new bill? Doesn't it prevent the State from passing any new ordinances on the subject? We have built relying on our right under the law first quoted, and think it would be an injustice to cause us to change now. Would not this be legislation impairing the obligation of contract? C. B. W.

WE appreciate the fact that the proposed legislation is very unjust and should be defeated if possible, particularly if passed in the interest of the telephone monopoly as you state. Every effort should be made to kill the bill in its passage because if it once becomes a law it would probably be valid. The State in granting a telephone company the right to construct its lines over public roads does not thereby relinquish its control over the exercise of such right. Neither does the State deprive itself of the right to exercise the police power in any way. The granting of the right to use the public roads is done with an implied reservation that the State, nevertheless, may regulate the use and location of the poles, the heights of the wires and their location. Should the poles become a nuisance or obstruction on the highway, the State could then remove them or require that they be placed underground. Am. Rapid Tel Co. vs. Hess, 125 N. Y., 641; 13 L. R. A. 454; 21 A. S. R. 764.

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IN THE OPERATING FIELD

KANSAS CITY FIRE DEPARTMENT DISCONTINUES USE OF BELL TELEPHONES.

SOME weeks ago the Fire Department of Kansas City had a private system installed, with connections to the exchange of the Home Telephone Company made through a branch exchange switchboard at its headquarters. A Bell telephone was placed beside the Home board, and whenever any subscriber for Bell service sent in a fire report it was expected that the message would be transmitted to this single instrument, and notification sent to the proper station over the lines of the Fire Department branch exchange, installed by the Home company.

It is said that the Bell Company objected to allowing its lines to be used in this way, and continued to have alarms turned in directly to the various stations where it had single instruments. The officials of the Fire Department objected to this interference with the routine they had established without avail. The latest report is that the wires of the Bell company to all the instruments in the stations throughout the city were cut by order of the Board, and that in this way it will compel the exclusive use of the Independent system for the giving of fire alarms.

TROUBLE FOR CUMBERLAND COMPANY PILING UP —A NEW INSTANCE OF ALLEGED POOR SERVICE IN TENNESSEE.

THE city council at Trenton, Tenn., recently notified the Cumberland Telephone Company that its service in that place was becoming intolerable because of antiquated instruments and exchange, and requested that a new exchange, switchboard, new instruments, etc., be supplied within a reasonable time. "If you do not in a reasonable time comply," the notice continues, "we will tax every pole in the city limits $3 apiece." Since the company was operating in that place on a State franchise, the council had no recourse but high taxes, which right it has by legislative enactment. Even since this positive demand the Cumberland company is said to have failed to improve its service.

NEW HAMPSHIRE CONSIDERING BILL GRANTING EQUAL TERMS TO TELEPHONE COMPANIES IN RAILROAD STATIONS.

INTRODUCED by Mr. Tilton, of Laconia, House Bill No. 279, in the Legislature of New Hampshire, provides that every railroad corporation or express company doing business in the State shall grant every individual or organization doing a telephone business with more than five hundred subscribers equal and reasonable terms with any competitor in its depots, station houses, offices, etc.

INDEPENDENT SERVICE REPLACES BELL AT YOUNGSTOWN, O.

CHAIRMAN HEINSELMAN, acting under authority of a resolution of the public service board of Youngstown, recently directed the manager of the Bell Telephone Company to remove all its instruments from public offices. This action was taken because the Central Union (Bell) Company was charging higher rates for service with a smaller number of subscribers than the Youngstown Telephone Company.

After a long consultation between the local manager and the headquarters of the company at Indianapolis, it is said the company decided to leave in the city offices without charge, the fifteen or twenty instruments which it has in service. It was unwilling to withdraw the instruments, but believed that a reduction of its rates to the city would bring about a corresponding necessity of lower charges to business men. Since the matter has been brought up by the city government, however, business men have come to realize that the Independent service satisfies all their needs, and is much better than that furnished by the Bell Company. A great many of them are therefore preparing to use it exclusively. Others feel that the city's present bargain is much better than the one it had before, and are laying their plans to secure a similar advantage for themselves.

OREGON CONSIDERING THE REGULATING OF TELEPHONE BUSINESS AND RATES.

HOUSE BILL NO. 126, introduced in the Legislature of the State of Oregon, provides for the appointment of a commission for the regulation of telephone business. Under the terms of the act, as now being considered, the Governor, Secretary of State and the State Treasurer shall constitute this commission, and shall have full power to fix rates, and adopt such rules for the regulating of the business as they may consider fit and necessary.

NORTH DAKOTA INDEPENDENTS MEET AT GRAND FORKS.

ON January 16th representatives of many Independent telephone companies met at Grand Fords, N. D., to discuss questions of development, and other matters of interest. Among those present at the meeting were A. B. Cox, Valley City, secretary of the North Dakota Independent Telephone Co.; John Carmody, Hillsboro, Hillsboro Telephone Co.; L. D. Richardson, general manager of the North Dakota Independent Telephone Co.; W. F. Baillie, Hunter, Hunter Telephone Co., and Mr. Lain, Kensal, Kensal Telephone Co.

Considerable attention was devoted to a project for a general meeting of Independent men in the state to be held next May in Fargo or Grand Forks. At this time it is proposed to form a regular organization of all the Independent companies of the state for the mutual protection and benefit of all persons associated with the movement.

BOOK REVIEW.

THE TREATMENT OF STORAGE BATTERIES, by R. W. Vicarey. Fifty-eight pages; illustrated with line drawings. Published by the Electric Accumulator, 15 Queen street, Cheapside, London, E. C., England. Price 2s. 6d. net.

This book is designed especially for practical men who, without previous experience, may be called upon to secure good results in the installation and management of storage batteries. It takes up in an exceptionally complete form, for a book arranged for readers of this class, the various considerations for the choice of a battery for a given class of work, the selection of a battery room, installation of cells and management and locating and clearing of troubles which are liable to occur. The arrangement of chapters is, from a practical standpoint, especially commendable.

NO FAULT IN DUPLICATION HERE.

OUR Bell friends who go into the publishing business as a side line devote a great deal of space to misinformation, printed, we imagine, very largely for the amusement of the sub-licensee companies who are waiting for Independent toll lines to be built. Occasionally, however, they show a keen appreciation of the humors of the situation, as is evidenced by the following from the *Wisconsin Telephone News*:

"A traveling salesman called on a merchant in a town where there are two telephone systems and asked him to go round to the hotel to look over his samples and lunch with him. The merchant accepted, but said 'Wait until I telephone my wife that I won't be home to lunch.' He went to where both tele-

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phones were on the wall side by side, took down both receivers and after a moment talked with his house. As he turned from the telephone the traveling man said: 'I beg your pardon, but I am curious to know why you tried to use both telephones at once?' 'Oh, that's easy,' said the merchant, 'the one that gets there first gets the business.'"

MEETING OF INDEPENDENT TELEPHONE MEN IN SOUTHWESTERN IOWA.

ON JANUARY 28 the members of the Southwestern Iowa Independent Telephone Association met at Council Bluffs. One of the objects of this meeting was the extension of the clearing house movement among Independent telephone companies in this section of Iowa, as well as the reorganization of the association, including the election of officers. The officers of the old association were chosen to continue in their places after its reorganization as follows: H. A. Kinney, Woodbine, president; J. F. Glenn, Denison, secretary and treasurer; C. H. Smith, Sioux Sity, delegate to the International Convention, with M. A. Reed, Woodbine, as alternate. The president named county captains as follows: J. F. Glenn, Frank McNally, M. A. Reed, G. A. Lanbach, S. B. Barnes, John Anderson, George Atkinson, J. G. Beachamp, A. M. Murphy, F. M. Chandler, J. C. Mansfield, L. E. Simpson, Jesse J. Whistler, H. H. Driftmier, and F. C. Musson.

The members who were present gave very satisfactory reports of their business during the past year. The opening of the new Independent exchange at Council Bluffs, the granting of a franchise to an Independent company at Omaha, and new toll lines have given a decided impetus to Independent development, with good prospects of continued rapid growth.

GOOD WORK OF HOME TELEPHONE COMPANY AT ROCKFORD, ILL.

R. H. GIBBONEY, superintendent and manager of the Home Telephone Company, of Rockford, Ill., in his annual report shows that his company has made a very satisfactory growth. Not only have two hundred new telephones been added during the past year, but orders are taken for nearly as many more. These will be installed as soon as the material, now on the way, can be put in place. New residence buildings have called for a great many telephones, and the business districts have not failed to give their share of the business. One big building alone, which is being erected, will call for a great many instruments, as the company has planned for the installation of one hundred telephones in this building alone.

Not only has the local business been well developed, but the scope of the service has been considerably extended by connection with outside companies, among which may be mentioned those operating in Jo Daviess, Stephenson, Boone, Ogle, Carroll, Whiteside and Lee counties. The various companies concerned expect to build in the near future a new copper toll line, which will connect the county seats of these various counties.

ATTENDANCE AT THE MEETING OF TEXAS INDEPENDENT TELEPHONE ASSOCIATION UNUSUALLY IMPORTANT.

MEMBERS of the Independent Telephone Association of Texas are urged to make every possible effort to attend the convention which is to be held February 21 and 22 at the Exchange Building of the Fort Worth Telephone Company, Fort Worth, Texas. The Legislature of the State is considering several bills, the passage of which would be exceedingly injurious to the interests of the telephone companies. It is of the utmost importance that all telephone men in the State should get together and devise plans for the enlightenment of the legislatures on the important questions with which they must deal. Any company which fails to send a representative to this meeting has no cause for complaint if it is later compelled to suffer by detrimental legislation.

SUPREMACY OF INDEPENDENTS IN OHIO SHOWN BY FIGURES FROM EACH COUNTY.

PRESIDENT FRANK L. BEAM, of the Ohio Independent Telephone Association, has recently issued a report which shows how far in advance Independent telephone companies are of their Bell rivals in the State of Ohio. These figures were gathered very carefully from reliable sources, and the association believes that they are very nearly correct. At the end of the report the figures in which we have reproduced in the table at the foot of this page, is a statement showing the growth of Independent companies in the State of Ohio since the issuing of the first official report by the association on March 30, 1905, as shown by the following figures:

		Exchanges.	Toll Stations.	Stockholders.
March 30, 1905.....	196,937	668	1,452	17,029
March 29, 1906.....	248,304	797	1,705	21,748
October 1, 1906.....	270,720	835	1,663	24,650

Counties.	Independent Telephones in Service: Telephones.	Exchanges.	Toll Stations.	Stock Holders.	Bell Telephones in Service: Telephones.	Exchanges.	Toll Stations.
Adams....	500	4	21	15	487	3	5
Allen.....	5124	10	12	611	1962	2	14
Ashland..	2723	15	4	710	5	1	9
Ashtabula.	5508	24	25	1693	705	3	12
Athens...	2993	13	41	554	1408	7	23
Auglaise..	2573	8	2	303	0	0	4
Belmont..	2959	16	10	216	926	5	7
Brown....	475	4	10	240	400	5	15
Butler....	4087	10	76	360	2349	4	0
Carroll...	1247	16	20	40	114	2	8
Champaign	2897	9	15	136	274	2	11
Clark.....	3793	7	7	99	4500	13	34
Clermont.	1170	12	60	75	800	7	7
Clinton...	2400	6	19	25	500	5	7
Columbiana	4178	19	40	204	2500	9	16
Coshocton.	2150	7	0	16	900	4	8
Crawford.	2200	4	11	60	400	1	0
Cuyahoga.	25990	20	35	1097	27500	16	19
Darke....	4900	11	37	155	62	1	18
Defiance..	2364	9	0	492	368	1	6
Delaware.	2718	8	7	182	400	3	4
Erie.....	2438	7	17	134	1409	2	8
Fairfield..	1749	7	8	35	1460	6	7
Fayette...	1725	5	18	10	500	2	4
Franklin..	11807	16	30	170	9500	6	18
Fulton....	2460	9	15	150	0	0	5
Gallia....	3117	19	45	2009	230	2	5
Geauga....	2520	13	25	442	0	0	6
Greene...	2057	6	6	56	1205	4	32
Guernsey.	2925	11	53	107	800	1	13
Hamilton..	171	2	0	171	20000	5	10
Hancock..	1438	2	7	20	1900	1	0
Hardin....	3014	8	5	178	365	2	10
Harrison..	1325	10	30	205	235	2	10
Henry....	1770	11	0	31	53	1	5
Highland.	1950	5	12	225	900	6	9
Hocking..	702	1	3	51	225	1	3
Holmes...	1446	12	13	171	0	0	1
Huron....	3554	13	20	360	600	1	15
Jackson...	30	1	3	5	525	4	15
Jefferson..	2071	21	26	443	1188	2	11
Knox.....	3212	8	27	208	970	4	8
Lake.....	1882	10	20	451	398	2	13
Lawrence.	1765	10	3	150	675	2	0
Licking...	4277	11	12	277	1000	2	10
Logan....	3500	14	32	229	300	2	16
Lorain....	5979	15	32	250	921	1	7
Lucas....	11610	7	29	181	5971	6	5
Madison..	1847	9	37	216	200	1	8
Mahoning.	3490	8	11	65	2340	4	3
Marion...	3165	8	3	127	1880	9	0
Medina...	2490	11	2	428	150	1	1
Meigs....	3830	18	14	3506	900	3	3
Mercer...	3069	18	17	1308	0	0	13
Miami....	5172	13	25	310	150	1	4
Monroe...	778	8	10	39	10	1	1
Montgomery	8176	23	27	742	8408	4	20
Morgan...	2200	7	12	19	0	0	1
Morrow...	1866	12	13	52	200	3	8
Muskingum	3605	15	25	104	3280	7	15
Noble.....	1615	12	38	63	524	2	7
Ottawa...	1751	7	24	100	50	2	7
Paulding..	1176	6	13	42	185	1	6
Perry.....	300	1	4	26	1531	7	10
Pickaway.	1514	4	29	38	641	2	12
Pike.....	500	4	10	15	17	1	0
Portage...	2315	8	18	180	400	1	14
Preble....	2513	13	3	182	100	1	12
Putnam...	1871	12	19	25	1871	12	19
Richland..	4587	8	18	141	1890	4	4
Ross.....	2324	4	42	100	725	3	20
Sandusky.	3239	4	8	134	495	1	5
Scioto....	1717	3	0	20	550	2	0
Seneca...	1751	4	6	65	1020	1	4
Shelby....	1597	5	20	87	160	1	16
Stark.....	6732	10	36	254	4420	8	29
Summit...	4873	8	27	126	3200	4	16
Trumbull.	3174	16	28	554	1328	3	17
Tuscarawas	4759	8	15	77	840	3	15
Union....	1622	10	14	35	25	1	4
Van Wert.	2789	10	18	324	0	0	7
Vinton...	650	5	6	8	93	1	3
Warren...	1136	6	18	200	542	2	28
Washington	2140	11	50	54	1475	3	21
Wayne...	3556	18	16	344	0	0	4
Williams..	3623	11	18	130	170	1	13
Wood....	2700	10	20	340	2280	9	6
Wyandotte	1065	2	6	50	1200	4	0
Totals..	270720	835	1663	24650	141111	275	839

Statistical Report of the Ohio Independent Telephone Association, showing Development of Bell and Independent Systems, Oct. 30, 1906.

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TELEPHONE PATENTS

POLE SPLICING DEVICE.

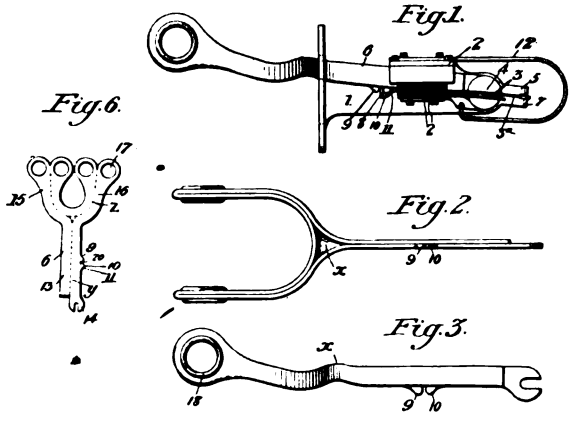
Frank Neal Drane, Corsicana, Texas, patents (No. 841,489; dated January 15, 1907; filed May 26, 1906; serial No. 318,837) a pole splicing device.

This invention covers a bracket-like member adapted to fit closely against the surface of a pole, and carrying on its inner surface a lug for engaging a hole formed in the pole. Pairs of these clamping blocks are set in the butt and the pole respectively, in vertical alinement, at intervals around the two portions to be spliced. The bracket members are then joined by bolt rods which clamp them firmly together. Each pair of brackets so joined by the bolts forms a supporting device, which tends to maintain the pole in an upright position. In order to prevent lateral movement the centres of the pole and butt respectively have bored in them a vertical hole into which is set a dowel.

SWITCH HOOK.

Ray H. Manson, Elyria, O., patents (No. 841,993; dated January 22, 1907; filed December 2, 1905; serial No. 290,039) and assigns to the Dean Electric Company, Elyria, O.,) a switch-hook.

The main switch lever 6 covered by this patent is designed to operate in connection with a switch of the type shown at the right of Fig. 1, covered in patent serial No. 200,899. A blank of the form shown in Fig. 6 is stamped out of sheet metal. It comprises a relatively long shank 13, having at one end a notched ear 14, preferably disposed to the right of the median line y. This is designed to engage the stub lever 5. At the opposite end of the shank the body is bifurcated to form separate legs 15 and 16, of a form indicated in Fig. 6, and each leaf is punched out to form apertures 17, for the reception of annular rivets 18. Lugs 9 and 10 form a notch 20, which is engaged when in operation by tongue 8 of the stub lever 5. Ear 10 is provided with a cam 11, which depresses tongue 8 and the



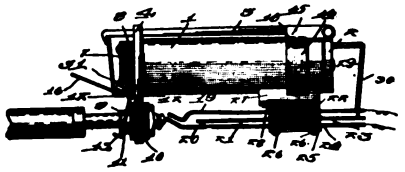
forward end of the lever 5 when the main hook lever is pushed in place. Actuating spring 12 engages a notch formed in the lower side of the stub lever, so as to normally force tongue 8 into engagement with and to raise the main lever 6.

After the blank is, by suitable pressure, folded along the lines y z, as shown in Fig. 2, so as to double the thickness substantially throughout the entire length of the shank and legs, which ordinarily form the weakest part of the hook, the hollow rivets 18 are used to secure the folds together, their form giving the completed hook a finished appearance.

EXPRESS DROP.

Martin V. Mehren, Genoa, Ill., patents (No. 842,409; dated Jan. 29th, 1907; filed June 2, 1904; serial No. 210,844) and assigns to Eureka Electric Co., Chicago, Ill., an express drop.

In this patent for a combined switchboard jack and mechanical self-restoring drop, the construction covers a ring lever, 13, which embraces the outer projecting end of the socket, 11, associated with the jack. This lever is pivoted upon opposite sides of the jack socket, as shown at 14. The lower end of the lever is pro-



vided with an outwardly bent portion, 15, and its upper end is provided with pads of insulation, 16.

When the operator plugs into the jack she causes the shank of the plug to strike the lower end, 15, of the lever, which causes it to swing upon its pivot so that its upper end acts outwardly against the lower end of the drop shutter, 9, which it restores to its former position.

COMBINED TELEPHONE AND ALARM SYSTEM.

Harry G. Webster, Chicago, Ill., patents (No. 825,623; dated July 10, 1906; filed April 26, 1904; serial No. 204,978) and assigns to Milo G. Kellogg, Chicago, Ill., a combined telephone and alarm system.

In this patent the inventor gives general specifications for systems in which telephone circuits extending from a telephone exchange to subscribers' stations may be utilized for the transmission of fire, burglar or other alarm signals. Briefly the scheme is the use of a telephone line circuit in connection with special arrangements by which a substantially continuous flow of current is maintained in the circuit except when interrupted by the alarm sending apparatus. The interruption causes special signals to be received at the telephone exchange.

The specifications include several pages of descriptive matter and 38 drawings illustrating the application of the invention to various practical conditions stated by the inventor.

TELEPHONE SYSTEM.

Alfred H. Weiss, Evanston, Ill., patents (No. 841,292; dated Jan. 15th, 1907; filed Sept. 3rd, 1904; serial No. 223,198) and assigns to the Kellogg Switchboard & Supply Co., Chicago, Ill., a telephone system.

This patent covers a telephone line adapted to the use of a lamp signal in a magneto exchange. The line circuit is similar to that shown in patent No. 836,541, covering a cord circuit, described in AMERICAN TELEPHONE JOURNAL, issue of December 29th.

At the sub-station is a local battery instrument provided with a generator for calling. Line wires terminate at the exchange on tip and ring springs of the jack. The sleeve and normal contact associated with the tip spring are grounded. Permanently connected to the ring side of the line is a leg to a contact of a relay adapted to be brought into connection with ground, when the relay is operated, as the armature associated with this contact is grounded. One side of the relay is connected to the normal con-

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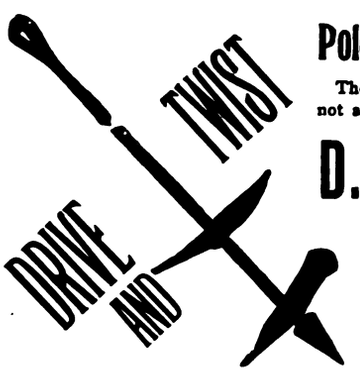

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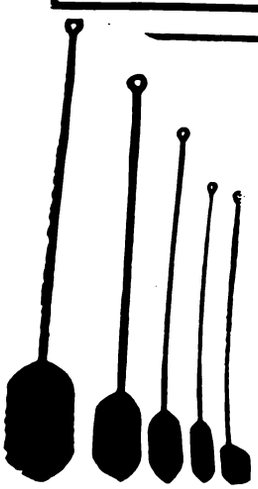

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PATENTS—Continued.

tact associated with the ring of the jack, while the other goes through the line lamp to ground. Between the line lamp and the relay is a tap to a second armature contact. When the relay is operated this contact is connected to an armature wired to the negative, ungrounded side of the battery.

It is evident that when the subscriber rings, current will operate the relay, which will be held up over the locking circuit by the battery current, and the lamp will remain lighted until the operator plugs in.

Once the relay is operated, provision against its deënergization by an opposing wave from the hand generator is made by the shunt to ground through the leg from the ring side of the line and the relay armatiure. The insertion of a plug by the operator opens the relay from the line at the normal contacts of the jack. This allows the armature to fall back to put out the line signal.

SECTIONAL POLE.

Henry M. Sciple, San Francisco, Cal., patents (No. 841,344; dated January 15, 1907; filed February 10, 1906; serial No. 300,409) a sectional pole.

The invention covers a sectional pole composed of a series of angle iron members, with the angle edges pointing inwardly. Each of these members has at its lower end divergent feet, which may be secured to a base plate adapted to be set upon the ground, and anchored in any suitable manner. In order to hold together the several uprights partition plates are set within the angle irons at intervals in the length of the pole. These are provided with angular recesses to snugly receive the uprights. For obtaining the desired taper partition plates of different sizes are used, the smaller being placed near the top. Outside the angle irons, in the same plane with each partition plate is set a clamping ring to hold the uprights permanently in engagement with the recesses of the inner plate.

LISTENING APPARATUS FOR TELEPHONE EXCHANGES.

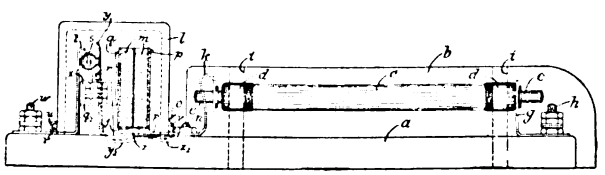
William W. Grigsby, Lawhon, La., patents (No. 841,244; dated January 15, 1907; filed June 12, 1906; serial No. 321,396) a listening apparatus for telephone exchanges.

The object of this invention is to provide a means whereby the chief operator may secretly listen to conversations carried on over the lines. Mounted in a circular formation upon a base are pairs of switch contacts, each pair being connected to the terminals of the secondary of an induction coil. The primary of this coil is connected in series with one of the wires composing a telephone line. The terminals for the listening operator's set are carried to a rotating arm having a pair of brushes adapted to be brought in contact with a pair of terminals associated with any line on the rotation of the arm.

SUBSTATION PROTECTOR.

Frank B. Cook, Chicago, Ill., patents (No. 842,628; dated January 29, 1907; filed March 12, 1906; serial No. 305,599) a substation protector.

This patent covers a protector in which tubular fuses *c c*,

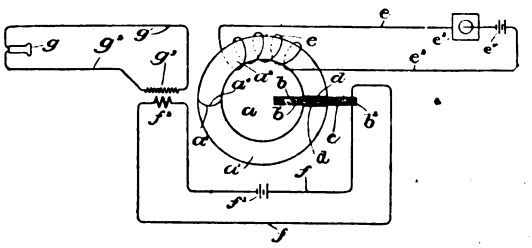


lightning arresters *m m*, and heat coils *s s* are all mounted on an insulating base of porcelain, *a*, being held in place by suitable contact springs. Between fuses *c c* is a rib, *b*, of insulating material, to prevent an arc from jumping across. The glass cover *l* is placed over the lightning arresters *m m* and thermal protectors *s s*. The line is preferably attached to posts *h h*. When a strong current comes in, it blows the fuse *c*, and disconnects the circuit to instrument. When a sneak current comes in, it causes thermal protector *s* to operate, releasing spring *y*, which flies back and makes contact with the ground strip at *q*. A high potential current discharges through the dielectric of the carbon lightning arresters to the spring *q* connected to ground. The instrument is thus designed to furnish protection against the three typical forms of dangerous currents liable to be set up in a telephone line.

TELEPHONE RELAY.

Albert L. Parcelle, Boston, Mass., patents (No. 843,296; dated February 5, 1907; filed October 12, 1900; serial No. 32,871) a telephone relay or repeater.

In this type of relay there is provided a circular magnet *a*,



divided into two sections a^1 a^2. It is designed to be mounted vertically, and the lower section a^1 is permanently magnetized, while the upper section a^2, bearing coil *e*, is of soft iron. In an opening in the ring is inserted a microphone *d*, containing between its electrodes *b* b^1 finely granulated carbon.

When the current in coil *e* is varied by the transmitter e^3 the magnetic flux throughout the ring changes in correspondence. As the two portions of the ring are pivotally secured together at a^3 a^4, the upper portion of the ring is caused to alternately approach and recede from the permanently magnetized division, effecting changes in the pressure between the electrodes *b* and b^1. These changes affect the resistance of the granular carbon, producing current changes in the circuit including battery f^3 and primary winding of induction coil f^2. These variations are transmitted to the secondary, g^3, from which they pass to the receiving line.

TELEPHONE MECHANISM.

Robert A. Davidson, Santa Cruz, Cal., patents (No. 835,181, dated November 6, 1906; filed May 14, 1906; serial No. 316,711) a telephone mechanism.

This invention is intended to provide means whereby when a subscriber leaves his receiver off the hook a signal may be transmitted to the central office and the operator at the central office, upon receipt of such a signal, may operate means for automatically opening the talking circuit which may again be automatically closed upon the return of the receiver to its proper place.

An electro-magnet is provided at the sub-station. This has two windings, one adapted to be controlled by the receiver hook and the other by the current passing from the central office to a local ground in which an end of one winding terminates. Should a subscriber fail to hang up the receiver after having used the telephone the circuits and apparatus are so arranged as to transmit a signal to the central office. At the same time the apparatus at this particular station is placed in a position to receive a special current sent out by the operator at the central station for the purpose of opening the instrument circuit to prevent interference with other subscribers on the same line. When the subscriber replaces his receiver the circuits will be restored to their normal condition.

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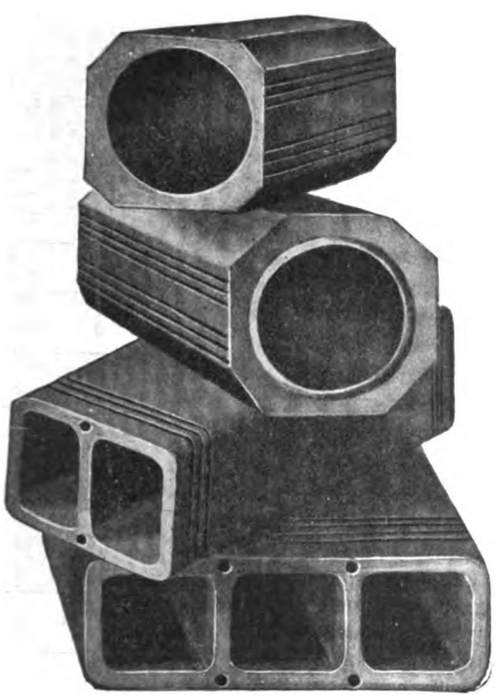

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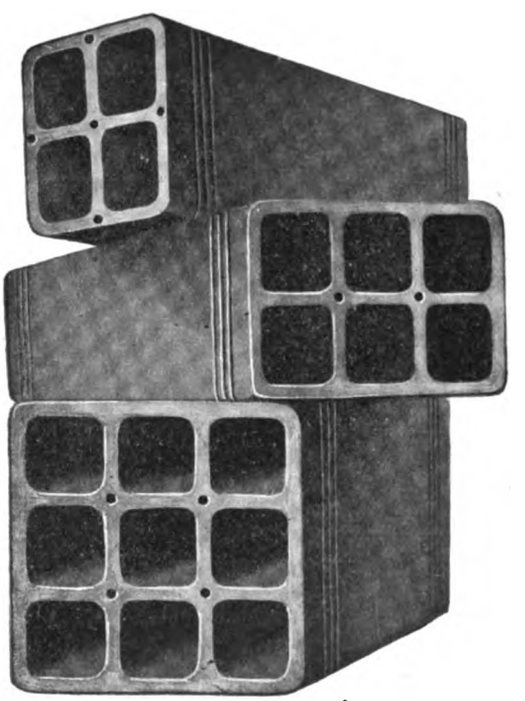
4 " " "
3½ " Square "
3¼ " Round "
(Socket Joint)

MULTIPLE DUCT
2, 3, 4, 6 and 9 Duct
3¼ inch Square Bore
3½ " " "

MULTIPLE DUCT
2, 3, 4 or 6 Duct
3¼ inch Round Bore



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A SINGLE COIL RINGER.

A SAVING of space in the telephone box and simplicity of mechanism are two of the principal advantages which are claimed by the Electric Manufacturing and Equipment Company, of Atlanta, Ga., for the Wotton Single Coil Ringers. The mechanism of this ringer is shown in the accompanying illustration. The armature is mounted within the coil, which is wound upon an insulating tube. The magnetic circuit is completed through pole pieces which extend for a considerable distance along the magnet, and are maintained in perfect contact with it, being held to each pole of the magnet by a screw. The gongs are rigidly secured to extensions of the frame. The economy in space is evidently due to the fact that with a total length the same as that of the double coil ringer the width of the mechanism is little more than half. This permits of an arrangement of other apparatus in the instrument cabinet which gives ample room for obtaining access to the parts, or the removal of them, without disturbing connections, even if a smaller box than is customary be used for mounting the apparatus ordinarily comprised in a set.

The simplicity of the mechanism in this type of ringer is made evident on examination of the illustration. The company claims that it has been carrying on the experiments which have led to the development of this type of ringer for more than six years, and the result is an extremely efficient piece of apparatus. An interesting feature is its adaptability to varying frequencies, as the company states that it will operate clearly on an alternating current of from two to sixty-six cycles. Further information can be obtained by writing to the manufacturers.

The Wotton Single Coil Ringer.

T. J. COPE, 3244 North Fifteenth street, Philadelphia, Pa., manufactures a type of conduit rod which has a very efficient joint. The two parts of the rod may be instantly put together, and when once in place they are firmly locked, so that there can be no lost motion. These rods are made in three and four-foot lengths. Prices and further information may be obtained from the manufacturer.

JULIUS ANDRAE & SONS COMPANY, 99 West Water street, Milwaukee, Wis., is furnishing a great many condensers of a type which may be mounted upon the wall beside a telephone instrument, for use on rural party lines. This instrument is fastened in place with an ordinary screwdriver, and connections are carried to receiver posts in the telephone. The receiver is then attached to binding posts on the condenser. The apparatus is mounted in a neat case, and as it may be set close beside the telephone does not present an unattractive appearance, or interfere with the handling of the receiver.

The advantage in its use is due to the fact that, in an instrument not so equipped, when a receiver is removed from the hook any subsequent rings on that line will be short-circuited through the receiver, and will not actuate the bell of the desired party. When the condenser is used, however, the resistance to the ringing current is very much increased, so that it will take a path through the bell in preference to that through the condenser and receiver. The high frequency talking current does not meet the same impedance, so that the ability to hear well is not affected by the use of this device. The company will send full information, including diagrams for connecting to various types of telephone circuits, upon receipt of a request.

FRANK B. COOK, 238 West Lake street, Chicago, Ill., claims some very important advantages for his new No. 10 Protector for central offices. Among these perhaps the most important is that the heat coil is not made of wire, and therefore cannot be burned out or short circuited. Loose connections are avoided in the protector itself by doing away with all bolt connections for transposing line and switchboard terminals. This is the type of protector of which 16,000 pairs were installed at the new St. Louis office upon a single rack. A descriptive bulletin has been prepared which will be sent to all interested persons.

THE UNITED STATES COIN REGISTER COMPANY, Toledo, O., is prepared to send out some very interesting information about the United States combined cash register and pay station. This pay station is furnished with a tape upon which a record of the amount of every deposit is made automatically. This tape is automatically cut off and deposited in the cash drawer when collection is made. It furnishes a record which enables the accounting department to have an absolute check upon all collections, and avoid errors and disputes. The company will send full information upon receipt of a request.

THE MONARCH TELEPHONE MFG. COMPANY, Chicago, Ill., has developed a drop signal for use in connection with ordinary telephone ringers. It is especially useful in places where more than one bell must be mounted in the same room. When the bell rings a shutter is released by the movement of the striker, and remains in an indicating position until it is restored by hand. This enables the person whose attention has been called to the ringing of the bell to know immediately upon which line he should make connection, avoiding the necessity of listening in on each line until he finds the person who has called him. This apparatus is mounted in connection with jacks to provide an arrangement which permits the switching of a single talking set to any one of the desired lines, a combination which is especially useful when rural lines from several subscribers terminates in one place. Full information concerning this apparatus may be obtained by writing to the company.

THE NORTHERN ELECTRIC AND MACHINE COMPANY, Brooklyn, N. Y., has engaged to handle the entire output of creosoted pins and brackets manufactured by M. P. Osborne & Son, of Camden, N. Y.

THE W. G. NAGEL ELECTRIC COMPANY, Toledo, O., in the February number of the *Electrical Times* prints the usual current price summary, which gives latest prices upon construction material, wires, batteries, etc. This feature of the paper is especially interesting to all telephone managers and superintendents of construction, as it enables them to keep close track of the market and secure accuracy in all estimates. An interesting article in this number shows the danger of stringing telephone wires on the same poles with those bearing currents at a high voltage.

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in secret Laboratory Tests
are Unable to **BEAT**

THE ONE SLOT
Livermore Pay Station

It will soon be on the market for general sale. In the meantime YOU SHOULD FAMILIARIZE YOURSELF WITH IT.

Get Particulars

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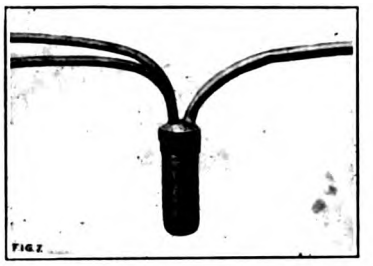


A MONEY SAVER S

YOUR MONEY

will earn more in direct proportion to the wisdom of your investment of it.

If you could splice your cables better and for less money, you would do it? It would be a wise move to adopt a device that would accomplish this result for you. A good investment.

If your regular lineman could make a better splice, absolutely watertight and airtight, you would like to let him do it? You would welcome the chance to buy a device that would enable you to get away from the heavy cost of horizontal splices.

When "shooting trouble" you would like to get away from the necessity of tearing open your horizontal splices that cost you so much money and will cost you nearly as much to repair?

HOW TO INCREASE IT

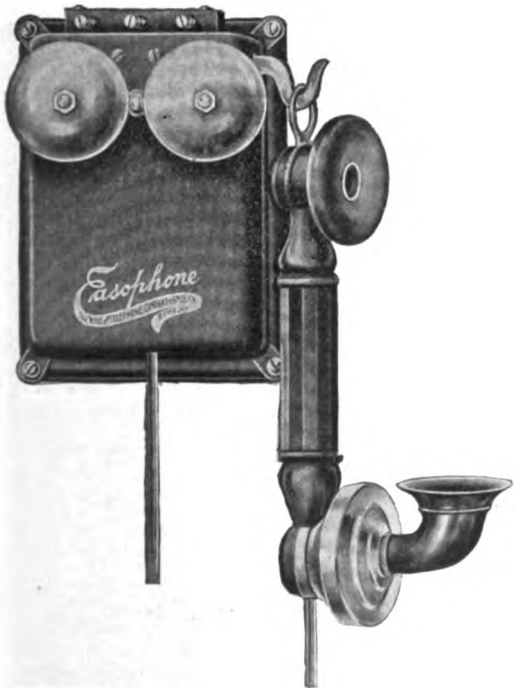
Let us send you descriptive matter of the Hargis Cable Splicing Joint shown above. Your regular lineman can make a better splice, quicker, at much less cost than an expert cable splicer can make a horizontal wiped joint. This will increase your money. By using the Hargis Cable Splicing Joint you save cable; you save labor; you save money; you can always get at your pairs without spoiling your splice when "shooting trouble."

It will pay you to write us for descriptive matter.

W. N. MATTHEWS & BRO.

Manufacturers of Patented Money Saving Specialties

242 North Second Street ST. LOUIS



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The WIRE and TELEPHONE COMPANY of AMERICA
ROME, N.Y.

Long Distance Hand Telephone
Long Horseshoe Magnet Receiver

SOLID BACK TRANSMITTER
NO EXPOSED CONNECTIONS
SINGLE COIL RINGER
REVERSIBLE HOOK

WRITE FOR BULLETIN No. 101

THE WIRE & TELEPHONE COMPANY OF AMERICA

ROME, N. Y.

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NEW COMPANIES.

PARAGOULD, ARK.—An Independent Telephone Company is being formed at Paragould to construct lines connecting this city with Marmaduke, Rector, Greenway, Piggott and the surrounding country. The system will give Paragould connection with about seven hundred telephones.

LOS ANGELES, CAL.—Articles of incorporation have been filed by the Union Home Telephone & Telegraph Company, with headquarters at Los Angeles. The incorporators are J. M. C. Marble, of Los Angeles; John E. Marble, of Pasadena; J. E. Fishburn, of Los Angeles; Geo. Ellis, J. V. Baldwin, John Van Liew, F. W. Wachter, of Los Angeles; A. K. Detweiler, of Toledo, and A. B. McCutcheon, of Los Angeles. The authorized capitalization is $10,000,000, and the sum of $150,000 has been subscribed. It is proposed to build telephone and telegraph lines from San Diego to Los Angeles and Bakersfield, from Los Angeles to San Bernardino, Santa Barbara and other places. The filing of this incorporation follows the reorganization of the Home Company some time ago.

MONTROSE, COLO.—A Co-operative Telephone Company has been organized to construct lines from Colona to Montrose, and the following officers have been elected: A. R. Walker, president; A. G. McDonald, vice-president; E. J. Shepherd, secretary; T. Topliss, treasurer.

CHICAGO, ILL.—The Chicago, Indiana & Eastern Long Distance Telephone Company, Chicago, has been incorporated with a capital stock of $5,000. The incorporators are C. H. Poppenhusen, J. L. McNab and William G. Hamilton.

GREENVIEW, ILL.—It is the intention of the Sweetwater Telephone Company to incorporate, and the following officers have been elected: R. Grimsley, president; John Terhune, vice-president; John Brassfield, secretary; Lee Stone, treasurer.

DUPONT, IND.—Articles of incorporation have been filed by the San Jacinto and Dupont Telephone Company, and the following are among the incorporators: W. D. Carson, C. Hoffman, Edward Eble and Thos. Hall. It is the company's intention to build lines and establish exchanges throughout Jennings and Jefferson counties.

LYONS, IND.—Articles of incorporation have been filed by the Lyons Co-operative Telephone Company. It has an authorized capital stock of $10,000, and the directors are John Davidson, G. W. Carpenter, W. D. Boyd, Helmer Holmes, Willard Webster, George Bogard, W. W. Clogston, Emil Pein and George Davidson.

UNION MILLS, IND.—An Independent telephone company has been formed by the farmers about Union Mills, and the following officers elected: President, F. B. LeSourd; vice president, Wallace Nichols; treasurer, C. F. Stephenson; secretary, Alva Stephenson.

DEXTER, IA.—The Mosher Mutual Telephone Company, with its principal place of business in Harrison township, P. O. address Dexter, has been incorporated with a capital stock of $5,000. It is its intention to construct and operate telephone lines in Adair and the adjoining counties, and the following are among the incorporators: Geo. Elliot, G. E. Sellers, H. C. Minor.

HOLSTEIN, IA.—The Advance Rural Telephone Company, of Holstein, has filed articles of incorporation. Its capital stock is placed at $25,000, and W. F. Hutton and others are the incorporators.

IOLA, KAS.—A Farmers' Telephone Company has been organized at Iola, Kas.

ONONDAGA, MICH.—The Onondaga and Leslie Telephone Company has been incorporated with a capital stock of $800. The officers of the company are: President, H. Baldwin; vice president, A. De Laur; secretary and treasurer, F. C. Baldwin.

NOTTINGHAM, N. H.—Articles of incorporation have been filed by the Nottingham Telephone Company.

SINCLAIRVILLE, N. Y.—The Sinclairville Independent Telephone Company has been incorporated with a capital stock of $5,000. Among the incorporators are E. J. White, C. N. Love, C. C. Febber, South Stockton.

BOWDON, N. D.—An Independent telephone company is being formed by the business men of Bowdon, and it is the company's intention to build a number of rural lines.

ZELMA, OKLA.—Articles of incorporation have been filed by the Beaver & Cimmeron Valley Telephone Company of Zelma and Englewood. It has an authorized capital stock of $5,000, and the incorporators are A. J. Sands, Ottis Barley, W. L. Detwiler, of Zelma; F. M. Mills, of Coin, and C. W. Newby, of Englewood.

CHEMAWA, OREGON.—The Chemawa Mutual Telephone Company has incorporated with a capital stock of $1,000. It is the intention of the Chemawa Mutual Company to absorb the interests of the Chemawa-Brooks Mutual Co-operative Telephone Company.

LORETTO, PA.—An Independent telephone company is being organized at Loretto for the purpose of building a line from Bradley Junction to Loretto and Munster, and the following officers have been elected: President, W. A. Sanker; secretary, M. J. Bradley; treasurer, W. J. Hogue. Those in Bradley Junction interested in the enterprise are H. Driskel, W. J. Buck, L. E. Kaylor, M. J. Bradley and others.

BLUEGROVE, TEXAS.—Articles of incorporation have been filed by the Bluegrove Telephone Company. The authorized capital stock of the company is $2,400, and the incorporators are W. H. Lewis, O. A. Blake, J. B. Herd, of Bluegrove.

CRAWFORD, TEXAS.—The Crawford Telegraph and Telephone Company has been incorporated with a capital stock of $6,000. Among the incorporators are J. B. Nicholas, M. Marks, W. D. Sutton and J. W. Gee.

HOUGHTON, ONT., CAN.—An Independent telephone company has been formed by a number of Houghton farmers, and the following officers elected: Jas. Boyd, president; J. Meharg, vice president; Wm. Alwood, J. A. Garham, Chas. McKim, H. Armstrong, C. B. Matthews, H. Maguire and John Hazel, directors. It is the company's intention to construct a line from Frogmore to Straffordsville, via Kinglake and Guysboro.

FRANCHISES.

GALENA, MO.—The Cherokee County Mutual Telephone Company has applied for a franchise at Galena. The company expects also to construct lines from Melrose to Columbus, Hallowell to Sherwin Junction, West Mineral to Columbus, and from Columbus to Weir City. New local exchanges are to be installed at a number of places.

FARGO, N. D.—Application has been made by the North Dakota Independent Telephone Company for permission to operate long distance lines in Fargo, and to construct and operate a number of long distance pay stations.

HUMACAO, PORTO RICO.—A telephone franchise will be granted to Juan Bertran, of Humacao, Porto Rico, for the construction and operation of long distance telephone lines in Yabucoa, Naguabo, Playa de Humacao, Humacao and other places if a bill now under consideration in the United States Senate is passed.

FINANCIAL.

HAMILTON, O.—The sixteenth regular quarterly dividend of one per cent. has been declared by the Hamilton Home Telephone Company.

DELL RAPIDS, S. D.—The Dell Rapids Telephone Company has declared a dividend of six per cent. from the net profits of the year.

WHEELING, W. VA.—It is the intention of the National Telephone Company to declare a four per cent. dividend next month, and thereafter the stock is to be placed on a two per cent. quarterly dividend basis.

EAU CLAIR, WIS.—The Luddington Telephone Company has increased its capital stock from $3,000 to $15,000.

COMBINATIONS.

QUINCY, ILL.—The Quincy Home Telephone Company has purchased the long distance lines running through Ellington township.

KITTANNING, PA.—An arrangement has been perfected by which the Kittanning and Armstrong County Telephone companies have been merged, and the Kittanning Company now has charge of about 110 miles of telephone lines, with exchanges at Leechburg, Avinmore, South Bend, Elderton, Rural Valley, Dayton and Smicksburg. Under the new management the lines will be overhauled and placed in first class condition.

CLIFTON, TENN.—The Consolidated Telephone and Telegraph Company has become the property of the W. C. Cole Telephone Company, the latter being composed of W. C. Cole, of Perryville, and J. U. Speer and L. A. Raines, of Parsons. The principal exchanges of the new company, which is to be known as the Consolidated Telephone and Telegraph Company, are at Savannah, Waynesboro and Clifton. The officers of the new company are W. C. Cole, president; L. A. Raines, vice president; J. U. Speer, secretary and treasurer.

ELECTIONS.

RICHMOND, IND.—The following officers have been elected by the Richmond Home Telephone Company: A. C. Lindemuth, president; Samuel Dickinson, vice president; James W. Moore, secretary; John M. Lontz, treasurer; E. H. Cates, L. M. Flesh, W. P. Orr, A. C. Lindemuth, Samuel Dickinson, James W. Moore and John M. Lontz, directors.

SHERMAN, MICH.—The Wexford County Independent Telephone Company has elected G. A. Lake, president; Carl East, vice president; G. A. Frederick, treasurer; W. E. Southwick, secretary.

STOCKBRIDGE, MICH.—The following officers have been elected by the Rural Telephone Company: President, Thos. Howlett; vice president, O. Jones; secretary, L. Milner; treasurer, H. Singleton; manager, S. J. Proctor.

OAKLAND, MINN.—The officers elected by the Four Corners Telephone Company for the coming year are Henry Holverson, president; H. Brierly, secretary; O. R. Johnson, treasurer; John Wood, manager.

HASTINGS, NEB.—The Hastings Independent Telephone Company

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and the high prices you have had to pay for Poles surely has impressed you with the necessity of making them last longer.

Avenarius Carbolineum

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has been on trial for over 30 years by leading telephone and telegraph companies, Railway companies, the U. S. Government, etc. By simply painting your poles with it, it will more than double their life. It is inexpensive.
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with all connecting wires, binding posts and terminal screws fully concealed

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from lightning while using the instrument. Send us your inquiry and we will "SHOW-U" at our expense an interesting proposition.

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Our Price is Right

MICHIGAN WHITE CEDAR POLES

In addition to our regular stock of White Cedar Poles in our Michigan Yards, we have the following special stock at outlying points—

Two cars---4 inch---20 foot
One car ---4 inch---25 foot
One car ---5 inch---20 foot
Two cars---5 inch---25 foot
Three cars--7 inch---25 foot
Two cars---7 inch---30 foot
Two cars---7 inch---35 foot
Two cars---7 inch---40 foot
Michigan White Cedar

One car ---7 inch---30 foot
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If you are in need of these or any other sized poles, write us for "Delivered Prices."

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KELLOGG SWITCHBOARD & SUPPLY CO.
CHICAGO, ILL.

EVERY COIL

of **Roebling Double Galvanized Telephone Wire** bears a tin tag and lead seal upon which the word "**Roebling**" is stamped.

Don't accept Wire without the **Roebling Seal.**

JOHN A. ROEBLING'S SONS CO., - TRENTON, N. J.

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THE WEEK'S MESSAGES

has named as directors for the coming year R. A. Patty, Herman Stein, J. N. Lyman, S. S. Snyder and G. J. Evans.

YORK, NEB.—The following officers have been elected by the York Telephone Company: President, G. H. Holdeman; vice-president, C. N. Beaver; secretary and manager, Edwin Bell; treasurer, H. M. Childs.

BERGEN, N. Y.—The Bergen Telephone Company has elected the following officers: Geo. R. Fuller, president; Geo. Sands, vice president; C. M. Beattie, secretary; C. E. Housel, treasurer.

GALWAY, N. Y.—The Galway Telephone Company has elected the following officers: Mine McWilliams, president; H. R. Crouch, vice-president; F. L. Smith, secretary and treasurer.

PATCHOGUE, L. I., N. Y.—The officers of the Suffolk County Telephone Company are H. C. Losee, president; F. Hammond, vice president; D. Chichester, secretary; J. T. Losee, treasurer.

PENN YAN, N. Y.—The following officers have been elected by the Yates County Independent Telephone Company: President, Charles E. Guile, Penn Yan; vice-president, Frank E. Spencer, Benton; secretary and treasurer, Marvin Spooner, Milo.

DELAWARE, O.—The Board of Directors of the Citizens' Telephone Company comprises C. D. Young, W. G. Hormell, W. Guy Jones, J. O. Gooding, W. M. Heseltine, J. L. Anderson, W. B. Hedges, A. J. Pounds, G. H. Carter.

MAHANOY, PA.—The Mahanoy & Mahantongo Telephone Company has elected the following directors: E. W. Dockey, W. P. Zartman, W. C. Leitzel and Herbert Cummings.

VANVOORIS, W. VA.—At the annual meeting of the Farmers' Telephone Company the following officers and directors were elected: A. M. Sterling, president; S. Morris, vice president; E. J. Moore, treasurer and general manager; W. A. Brown, secretary; directors, A. M. Sterling, Springer Morris, Imri Hunt, E. J. Moore, A. S. Mapel, F. B. St. Clair and W. A. Brown.

RHINELANDER, WIS.—The Rhinelander Mutual Telephone Company has elected Arthur Taylor, president; M. H. Raymond, treasurer; John Hanson, secretary; A. Taylor, D. J. Cole, D. F. Recker, E. A. Forbes, E. O. Brown, directors.

MISCELLANEOUS.

OMAHA, NEB.—The Independent Telephone Company has deposited with the city treasurer the $25,000 required as a forfeit under the franchise voted it last fall, and construction work will be carried on as rapidly as possible.

EAU CLAIRE, WIS.—The Chippewa County, Osseo, Bloomer and Ludington telephone companies and the Augusta and Caddot systems are to form a connection.

PORT LAVACA, TEXAS.—The Port Lavaca telephone system has been acquired by W. C. Best, the purchase price being $7,000. It is the new owner's intention to greatly improve the plant.

SHERMAN, TEXAS.—The Phoenix Telephone Company, which operated a line between Sherman and Honey Grove, has become the property of H. D. Keith and others. It is the intention of the new owners to build additional lines, making a through circuit from Texarkana to Fort Worth and Dallas.

ASOTIN, WASH.—The Asotin Telephone Company has been purchased from F. B. Simpson by N. J. Cunningham, of Clarkston.

BURGESSVILLE, ONT., CAN.—The Burgessvile Telephone Company, Ltd., in its annual report shows very satisfactory progress for the year just ended. This company now has about fifty miles of pole lines, with seventy miles of wire, and about one hundred and sixty-five telephones are connected to the two exchanges which it operates. Extensions of considerable importance are to be made in the near future in order to meet rapidly increasing demands for service.

PERSONAL.

G. W. COLTON has been appointed to take charge of the exchange of the Lackawanna Telephone Company at Scranton, Pa.

HENRY H. SYKES has recently been appointed to the position of general manager of the Southern New England Telephone Company at New Haven, Conn.

C. W. YOUNG has been appointed manager of the Council Grove Telephone Company's exchange at Council Grove, Kan.

New Construction in the Field

LOS ANGELES, CAL.—The Home Telephone & Telegraph Company expects to increase the capacity of its plant to sixty thousand telephones, and construction work will be pushed as rapidly as possible.

BELVIDERE, ILL.—The Belvidere Telephone Company is at work installing its new system.

HOLLAND, IND.—A new line is being constructed from Holland to Selvin by the Holland Telephone Company.

INDIANAPOLIS, IND.—Many improvements are being made in the plant of the Indianapolis Telephone Company.

SIOUX CITY, IA.—The Sioux City Telephone Company contemplates the expenditure of over $75,000 in improvements during the coming year. These will include several miles of new cable, and pole line extensions in the northeast part of the city.

WAUKON, IA.—The exchange of the Standard Telephone Company is to be entirely rebuilt.

DENISON, KAN.—Among the improvements planned by the Denison Telephone Company is the installation of a new switchboard.

MOHAWK, MICH.—A telephone system from Mohawk to Mandan has been installed by the Keweenaw Central Railroad Company, and wires are also to be strung to Calumet.

YPSILANTI, MICH.—It is the intention of the Washtenaw Home Telephone Company to spend $200,000 in improving its system in and about Ypsilanti.

DULUTH, MINN.—Many new lines are to be built by the Peoples' Telephone Company.

LITTLE FALLS, MINN.—Many new lines are to be erected by the Darling Telephone Company.

BOWLING GREEN, MO.—Among the improvements planned by the Pike County Telephone Company is the installation of a new switchboard.

STERLING, NEB.—An entirely new system is to be installed by the Independent Telephone Company at Sterling.

NUNDA, N. Y.—It is the intention of the Nunda Telephone Company to install a new switchboard.

FULTON, N. Y.—It is the intention of the Oswego County Independent Telephone Company to expend about $75,000 on its Fulton exchange, and about $200,000 on the Oswego exchange. The company has recently obtained a franchise in Phœnix, where its lines will connect with the Syracuse Independent Telephone Company for long distance service.

LORAIN, O.—Plans for the improvement of its system by the Black River Telephone Company include the construction of a toll line from Lorain to Elyria, and the addition of four hundred and fifty lines to its switchboard.

MAHANOY, PA.—The lines of the Mahanoy & Mahantongo Telephone Company are to be extended to a number of towns in Northumberland and Schuylkill Counties.

HECLA, S. D.—The Dakota Central Telephone Company contemplates the construction of a line through the country west of the Missouri River, and from Frederick to Hecla.

MILBANK, S. D.—Additional lines are to be built by the Farmers' Telephone Company from Wilmot to Sisseton.

WENTWORTH, S. D.—Many improvements and extensions are to be made by the Battle Creek Telephone Company in its system.

WHITE LAKE, S. D.—The Crystal Lake Telephone Company expects to build new lines.

BRISTOL, TENN.—Many extensions are being made in the lines of the Bristol Telephone Company.

MART, TEXAS.—The Mart Telephone Company, of Mart, Texas, will erect a brick building and install a large amount of cable. It has placed an order for a full multiple central energy switchboard.

MILTON JUNCTION, WIS.—Much new construction work is planned by the Milton Junction Telephone Company.

SHEBOYGAN, WIS.—It is the intention of the Citizens Telephone Company to install a new switchboard and otherwise improve its system.

UNDERGROUND.

SAN DIEGO, CAL.—Some of the wires of the Home Telephone Company are being placed underground in San Diego.

SAN FRANCISCO, CAL.—About $30,000 is being spent by the Home Telephone Company in underground work in this city.

BOISE, IDAHO.—It is the intention of the Independent Long Distance Telephone Company to install underground plants at Nampa and Nyssa, Ore., franchises having been secured at these places.

HENRY, ILL.—An underground system is to be installed by the Henry Telephone Company.

LEAVENWORTH, KAS.—Considerable conduit work is being done by the People's Home Telephone Company at Leavenworth.

SCHENECTADY, N. Y.—A great many of the Home Telephone Company's wires are being placed in conduits.

GREENSBURG, PA.—All telephone wires are to be placed underground in Greensburg.

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The prices are so low, that we hate to see them in print. Better write.
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CROSS ARMS CAR LOTS OR LESS
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LOCUST PINS AND CROSS ARMS YELLOW PINE, IN TOLEDO FOR QUICK SHIPMENT.
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POLES
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YARDS: Menominee, Mich. Escanaba, " Cloquet, Minn. Heron, Mont. Cabinet, Idaho. Chicago, Ill.
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WHITE CEDAR POLES Longest Lasting Best Grade
OUR NEW STOCK COMING IN 100,000 TO 150,000 BY APRIL 1st
26 YEARS HAVE WE BEEN PRODUCING POLES. WRITE US
Yards { Omer, Bay City and Boyne Falls
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20 and 25 foot lengths for rural telephone lines a specialty.
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For Telephone Construction Purposes
Prompt attention given to quick delivery orders.
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Manufacturer of FINE INSULATED WIRE
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LARGE STOCKS PROMPT SHIPMENTS
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ERNEST L. CLARK, PRES.
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The Lindsley Brothers Co.
PRODUCERS AND SHIPPERS OF
WESTERN CEDAR POLES
AND MANUFACTURERS OF
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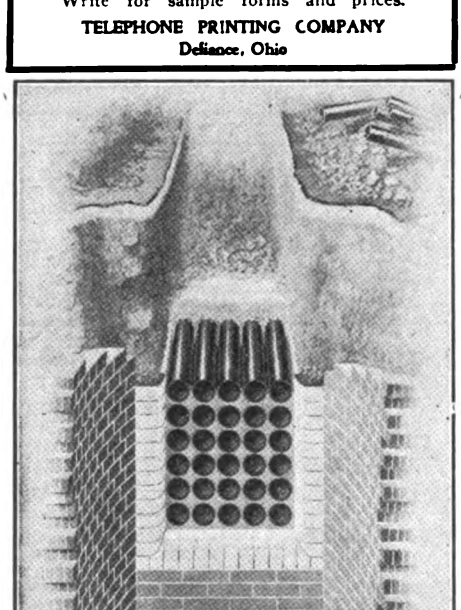
TELEPHONE LAMPS 869

1907 Lease Records 1907
FOR NEXT YEAR GET THE BEST
That's Our "New Form"
Many companies are now using it, and all are pleased. Ask for circular describing it. Order early and avoid the rush.

WE ALSO FURNISH

Toll Tickets.	Trouble Tickets.
Toll Journals.	Rental & Toll Bills.
Toll Ledgers.	Voucher Checks.
Monthly Check Reports.	Letter Heads.
Cash Books.	Card Index System.
Directories.	Steel Telephone Signs.

All kinds of blanks, books and forms for Telephone and Toll Line Accounting. Write for sample forms and prices.
TELEPHONE PRINTING COMPANY
Defiance, Ohio



BATTERIES
GENERAL STORAGE BATTERY CO
General Offices
42 Broadway, New York
Works, Boonton, N. J.

M. LANZ & SONS
Manufacturers of
SQUARE AND ROUND WASHERS
We Galvanize by the Hot Process
PITTSBURG, PA

W. H. CRUMB & COMPANY
ENGINEERS CONTRACTORS
TELEPHONE ENGINEERING AND CONSTRUCTION
Plans, Specifications and Estimates Promptly Furnished
First National Bank Building **CHICAGO, ILL.**

SAMUEL G. McMEEN KEMPSTER B. MILLER
McMEEN & MILLER
ENGINEERS: CONSTRUCTORS
Telephone and Telegraph Properties
MONADNOCK BLOCK CHICAGO

BEWARE OF IMITATIONS

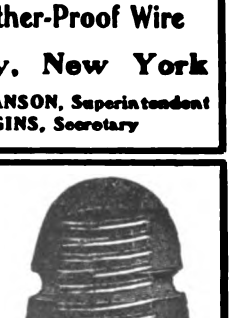
For the protection of our customers we advise that Klein's Pliers are being imitated to LOOK LIKE KLEIN'S. This, however, does not make them Klein's.
CAUTION. Look for this stamp, M. KLEIN & SONS, on the inside of handles—NONE are genuine without this stamp.
Use only genuine Klein's. They are the product of years of experience and have stood the test of time.
MATHIAS KLEIN & SONS - CHICAGO, ILL.

WESTON
STANDARD PORTABLE DIRECT READING
Voltmeters, Ammeters, Millivoltmeters, Voltammeters, Milliammeters, Ohmmeters, Portable Galvanometers, Ground Detectors and Circuit Testers.
Our Portable Instruments are recognized as THE STANDARD the world over. Our STATION VOLTMETERS AND AMMETERS are unsurpassed in point of extreme accuracy and lowest consumption of energy.
WESTON ELECTRICAL INSTRUMENT CO.
Main Office and Works, Waverly Park, NEWARK, N. J.
London Branch—Audrey House, Ely Place, Holborn.
Paris, France—E. H. Cadiot, 12 Rue St. Georges.
Berlin—European Weston Electrical Inst. Co., Ritterstrasse, No. 88.
New York Office—74 Cortlandt Street.

Weston Standard Portable Direct Reading Voltmeter.

OKONITE
TRADE MARK
REG. U.S. PATENT OFFICE.
1889—Paris Exposition Medal for Rubber Insulation 1893—World's Fair Medal for Rubber Insulation
Tho Standard for Rubbor Insulation
Okonite Wires, Okonite Tape, Manson Tape, Candee Weather-Proof Wire
THE OKONITE CO., Ltd., 253 Broadway, New York
Sole Manufacturers
WILLARD L. CANDEE, H. DURANT CHEEVER, } Managers
GEO. S. MANSON, Superintendent
W. H. HODGINS, Secretary

THE STANDARD
"HEMINGRAY"
All With The
"Patent Drip Petticoats"



The Hemingray-Glass Co., Office, Covington, Ky. Factory, Muncie, Ind.
ESTABLISHED 1848

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COMMERCIAL

OUR TRADE MARK

COMMERCIAL ELECTRICAL SUPPLY COMPANY. HIGHEST GRADE ST. LOUIS TRADE MARK

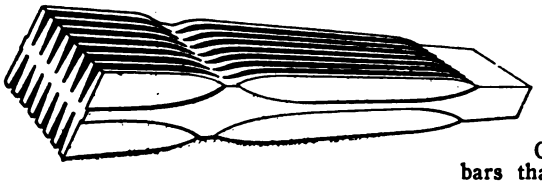
Every time you see it on correspondence on your desk it means a chance to save money.

We issue quarterly a net price list of line construction lumber, plain and galvanized hardware and telephone wires and cables. It contains up-to-date market prices and enables prospective purchasers and engineers to make estimates on new construction. Ask for it and you will be placed on our lists and receive it regularly.

Commercial Electric Supply Co.

15th STREET, ST. LOUIS, MO.

COMMERCIAL



The Gould Plate is Not Built-Up

The contact surface and grid are absolutely continuous metal. A sheet lead "blank" is passed between two sets of thin steel discs which "spin" the metal into numerous ribs. The illustration shows a fragment of a Gould plate—shows the ribs, the central web and conducting cross bars that equalize the current flow, to and from all points of the plate. This is one very important factor in long life.

Write for our booklet on Telephone Batteries.

SALES OFFICES
Boston—89 State St.
Chicago—Rookery Bldg.
San Francisco—Monadnock Building.
Toronto, Ont.—62 Wellington St., West.

Gould Storage Battery Co.

MAIN OFFICES
1 West 34th St.,
New York City.
Works, Depew, N. Y.

JUST A SUGGESTION

Take one of your busy 4-party lines and equip it with "POOLE" Lock-Outs. Leave it in service a month and then see how many of the four will stand a raise of $3.00 a year rather than go back to the old way. We know the answer, but we want your subscribers to impress on you the fact that the "POOLE" Lock-Out is a rate-raiser.

It won't cost you anything to try it, because we will loan you the Lock-Outs free and there is no other equipment required. Write today for our Booklet AL-2.

Mountain State Electrical Company

WHEELING, W. VA.

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DEAN TELEPHONE APPARATUS

Express Type Switchboard Operator's Sets

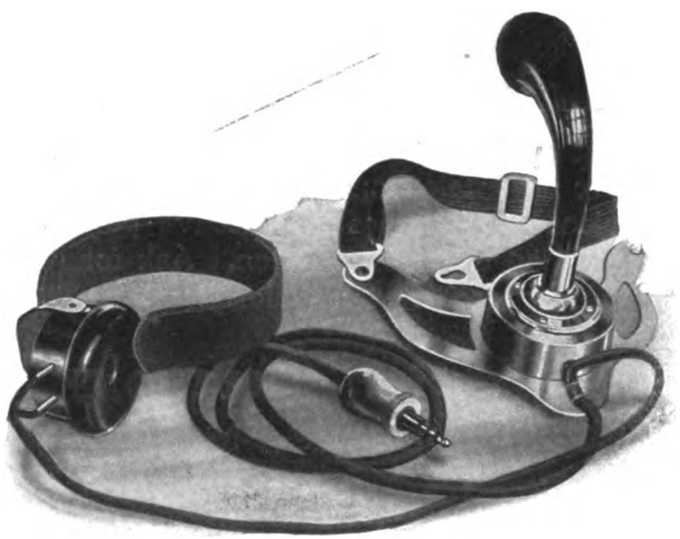

Fig. 1.

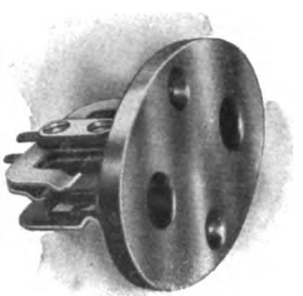

Fig. 2.

We are prepared to furnish our new breast-plate transmitter operator's set on our Express Type Switchboard instead of the regular suspended type transmitter, when so desired.

This new operator's outfit, shown in Fig. 1, consists of an all-aluminum frame transmitter, head receiver, silk covered connecting cords and a new design of four conductor connecting plug. The latter is made to eliminate the usual troubles of loose cord connections and undue breakage of the cord where it enters the plug.

The transmitter is extremely light in weight, powerful in action and made to stand rough usage. The working parts are interchangeable with those of the standard Dean transmitter, thus insuring the best possible results.

The cut-in jack, Fig. 2, used with this outfit, is of the twin type, the extra jack being provided for emergency use or for connecting a learning operator's set. The removal of the plug from the jack opens the transmitter circuit, so as to prevent waste of current when the operator leaves the switchboard.

The use of the breast-plate transmitter forces the operator to always talk directly into the instrument regardless of her movements, and gives her the free use of both hands for operating. Her *labors* are thereby made *lighter* and the *service* made *better.*

Our *magneto express type switchboards* have many other devices for bettering the service and simplifying the work of the operator and the switchboard man.

Let us figure on your next switchboard and telephone equipment. Our prices are right.

Factory and General Office
Elyria, Ohio

Branch Office
Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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Stromberg-Carlson Telephone Mfg. Company

Rochester, N. Y. February 23, 1907.

TO THE EXCHANGE MANAGER AND TELEPHONE USER:

Would you be willing to be convinced that by using "STROMBERG-CARLSON" Switchboard and Telephone Cords, the maintenance cost of your switchboards and telephones can be considerably reduced, and most cord trouble, if not all, eliminated?

Our cord and insulating department covers an area of 18,000 square feet, about one third of an acre. The most modern equipment is employed, consisting of 137 double and triple deck braiding machines, and 94 - 14 spindle insulating machines. Fifty finishers on cords occupy several specially equipped tables, arranged in a well lighted and ventilated work room.

Every "STROMBERG-CARLSON" Cord is inspected and given a break-down test before passed for final inspection. Imperfect cords are not shipped.

Subsequent letters will explain the designs, we will add nothing except to tell you that about three weeks ago we established NEW PRICES.

We offer you an opportunity to examine our samples and prices to-day!

Do not wait until to-morrow!

Yours very truly,

Stromberg-Carlson Tel. Mfg. Co.

CL No.1.
HCS/CB.

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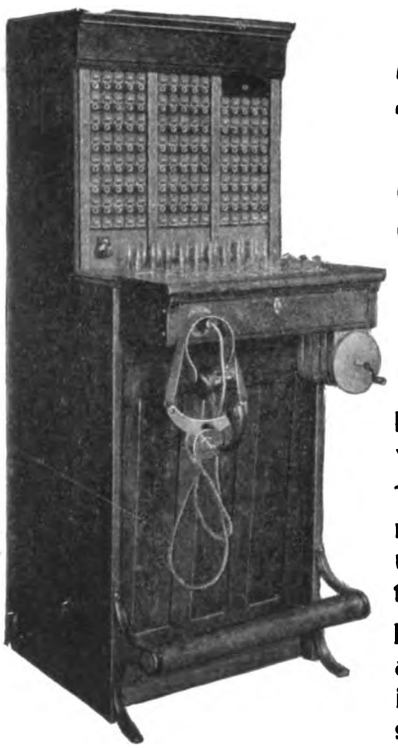


ARMY TYPE Switch Board

Fills a long felt want

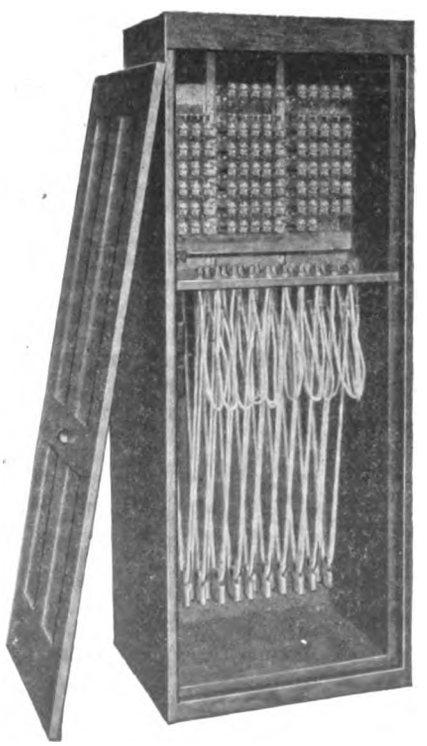
The drops are removed by unscrewing the jack face

Platinum night alarm contact in view when shutter is down

Manufactured by

Sterling Electric Co.

LAFAYETTE, IND.



Rear view showing drops and cord equipment

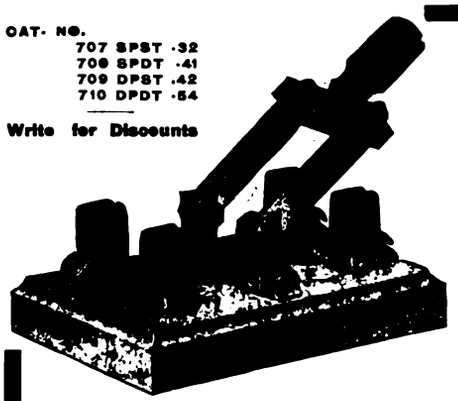
Buy cabinet, mount drops and jacks as required

Plug restoring

House of Good Goods

CAT. NO.
707 SPST .32
708 SPDT .41
709 DPST .42
710 DPDT .54

Write for Discounts



TRUMBULL TELEPHONE SWITCHES

Thousands Sold Each Month—Their Quality is Recognized

PERFECT ALIGNMENT
NO LOOSENED CLIPS
NO WARPED BASES

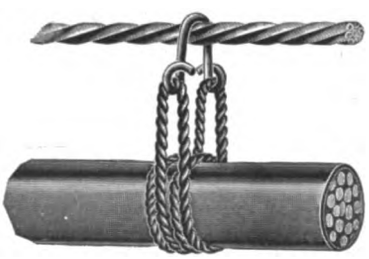
Each Switch is Inspected before leaving the Factory

WRITE FOR BULLETIN
IT TELLS ALL ABOUT THEM

The Trumbull Electric Mfg. Co.

NEW YORK 136 Liberty St. PLAINVILLE, CONN. BOSTON 65-67 Oliver St.

"National" Cable Hangers



Patent applied for

SIMPLE **DURABLE**

Cannot become detached from the messenger strand.

Hook will not straighten out.

Wires cannot be caught under the hook when being strung above the cable. We use the best grade of marline and houseline in the manufacture of our hangers. Write your jobber to-day for prices and samples.

National Telephone Supply Company

MANUFACTURERS

3923 Superior Avenue **Cleveland, Ohio**

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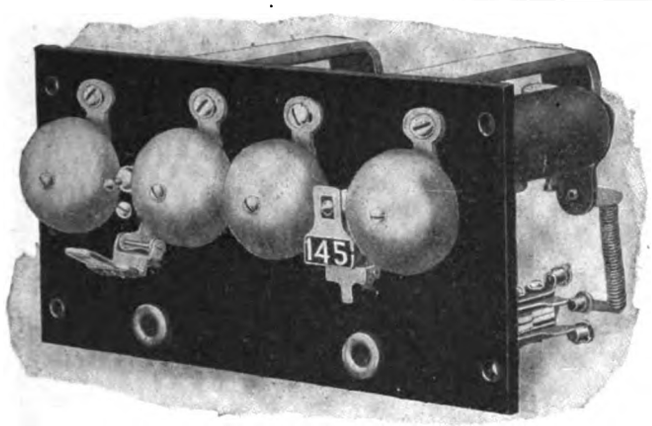

TOLL LINE SIGNAL

This signal is made up of standard ringer coils and a regular jack. The striker rod of the ringer has a projection beyond the striker ball which engages the drop. The mounting plate is just twice as large as the plate for five Monarch drops and jacks, so two ringers, drops and jacks occupy the space of ten drops and jacks. Our catalogue describes this toll line signal.

MONARCH TELEPHONE MFG. CO.

CHICAGO, U. S. A.

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U. S. COMBINED

Cash Register and Pay Station

[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE

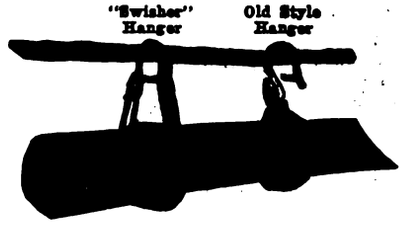
United States Coin Register Co.

TOLEDO, OHIO

SWISHER CABLE HANGER

(PATENT PENDING)

Only Best Marline and Houseline used. Double Galvanized Hooks. Hook cannot become detached from Strand. Hook cannot straighten. Stringing overhead wires will not catch in hook.



WRITE FOR SAMPLES AND PRICES

Manufactured by THE W. G. NAGEL ELECTRIC CO.

26-30 ST. CLAIR STREET, TOLEDO, OHIO

ORANGEBURG

Fibre Conduit

FOR UNDERGROUND SYSTEMS

WRITE FOR CATALOGUE

The Fibre Conduit Company

Orangeburg, N. Y.

Boston Office, 110 State St. Chicago Office, 1760 Monadnock Bldg

PIERSON, ROEDING & CO.

SAN FRANCISCO, CAL. LOS ANGELES, CAL. SEATTLE, WASH.

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KELLOGG

TELEPHONE APPARATUS

KELLOGG COMPACT DRY CELL TYPE TELEPHONES

CONTAIN STANDARD APPARATUS

Which Has Received Three Consecutive Highest Awards

GOLD MEDAL, BUFFALO, ... 1901
GRAND PRIZE, ST. LOUIS, ... 1904
GRAND PRIZE, MILAN, ITALY, . . 1906

The telephone shown here contains our No. 22 4-Bar Hand Generator, No. 1-A 1000 Ohm Ringer, No. 1-A Induction Coil, No. 65 Hook Switch, No. 22 Transmitter, No. 20 Transmitter Arm, No. 18-A Receiver, No. 3 Lightning Arrester, 2 Columbia Dry Cells and Oak Woodwork.

In the following numbers of this Journal we will describe each part of apparatus listed above used in these telephones. This type of instrument is rapidly coming into general use. Ours give universal satisfaction. A thorough investigation will justify all the claims we make of our supremacy in the manufacture of telephone apparatus.

Let our Department A furnish you with our Bulletins and prices on Magneto Apparatus. We solicit your correspondence.

BRANCH OFFICES:

PHILADELPHIA, PA. Keystone Tel. Bldg.
CLEVELAND, O. Electric Bldg.
KANSAS CITY, MO. 1413 Main St.
LOS ANGELES, CAL. 318 W. Second St.

KELLOGG SWITCHBOARD & SUPPLY COMPANY
CHICAGO, ILLINOIS, U.S.A.

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Sioux Falls

South Dakota Branch

300-302-304 NORTH PHILLIPS AVENUE

On and after February 1st we will make shipments from above named point. We will carry in stock a complete line of Telephones and Tele-phone Line Material, Wire Insulators, Cross Arms, Brackets, etc., etc., and all orders will be shipped same day they are received, insuring quick delivery and a con-siderable saving in freight charges. The establishment of this branch, together with our branch at Kansas City, Mo., places us in a better position to care for your wants than any other concern. We are now shipping two car-loads of telephones and supplies per week from Kansas City branch, will soon be shipping that amount or more from Sioux Falls branch. The Reason: prompt deliv-ery, correct prices and a product that is abso-lutely unequaled.

It will prove interesting to you if you will allow us to submit our 1907 proposition.

Address Nearest Office

Swedish-American Telephone Company

Chicago

KANSAS CITY, MO.
115 WEST SIXTH STREET

SIOUX FALLS, S. D.
300-302-304 NO. PHILLIPS AVENUE

You Wouldn't Start a Horse Car Line

in this age of electric cars? Not if you wanted to make money out of the business of transportation.

Then why should you start a manual telephone exchange in this age of automatics, if you want to make money out of the telephone business?

The automatic system of telephony bears the same relation to the manual system that the electric car does to the horse car. It is the apotheosis of telephone development, as the electric car is of transportation development.

The automatic telephone system produces the best service more economically than indifferent service can be produced with manual equipment.

There is no more question as to the relative popularity of the automatic and manual telephone service where the two kinds are in competition than there is as to the relative popularity of the trolley car and the horse car.

And, as for the securities—the same comparison may be applied with the same results.

Our Automatic system has been adopted in the following cities:

Aberdeen, S. D.	Clayton, Mo.	Jonesboro, Ark.	Ocean Park, Cal.	Springfield, Mo.
Akron, Ohio.	Cleburne, Texas.	Lake Benton, Minn.	Pentwater, Mich.	St. Marys, Ohio.
Albuquerque, N. M.	Columbus, Ga.	Lewiston, Me.	Portland, Me.	Tacoma, Wash.
Allentown, Pa.	Columbus, Ohio.	Lincoln, Neb.	Portland, Ore.	Toronto Jct., Can.
Auburn, Me.	Dayton, Ohio.	Los Angeles, Cal.	Princeton, N. J.	Traverse City, Mich.
Auburn, N. Y.	El Paso, Texas.	Manchester, Iowa.	Richmond, Ind.	Urbana, Ill.
Battle Creek, Mich.	Fall River, Mass.	Marianao, Cuba.	Riverside, Cal.	Van Wert, Ohio.
Bellingham, Wash.	Ferguson, Mo.	Marion, Ind.	San Diego, Cal.	Walla Walla, Wash.
Berlin, Germany.	Grand Rapids, Mich.	Medford, Wis.	San Francisco, Cal.	Watch Hill, R. I.
Buxton, Iowa.	Hastings, Neb.	Miamisburg, Ohio.	Santa Monica, Cal.	Wausau, Wis.
Cadillac, Mich.	Havana, Cuba.	Mount Olive, Ill.	Sioux City, Iowa.	Westerly, R. I.
Champaign, Ill.	Hazleton, Pa.	New Bedford, Mass.	South Bend, Ind.	Wilmington, Del.
Chicago, Ill.	Hopkinsville, Ky.	Oakland, Cal.	Spokane, Wash.	Woodstock, N. B., Canada.

AUTOMATIC ELECTRIC COMPANY, VAN BUREN and MORGAN STS. CHICAGO U. S. A.

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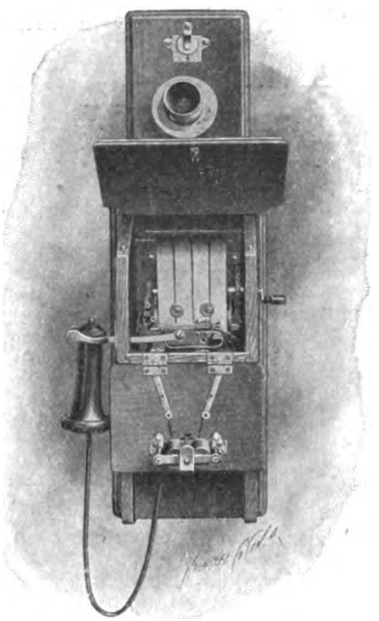
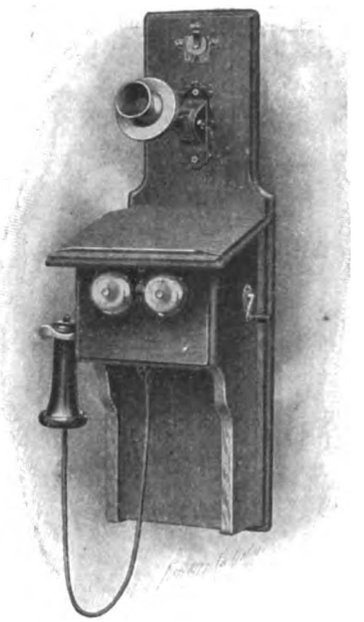
COMMON BATTERY TYPE CABINET MAGNETO 'PHONES

Sumter Standard Parts—with a few useful features the other fellow hasn't got yet

GET BULLETIN 41



WRITE TODAY



1907 MODEL

THE SUMTER TELEPHONE MFG. CO. ... SUMTER, S. C.

REASONS WHY

YOU SHOULD INSTALL

THE CALCULAGRAPH

No. 6

(See "Reason Why" No. 7 next week)

IT SAVES MONEY

Because it insures collection for every minute and fraction of a minute that your toll lines are in use. Its record is infallible because

It Makes No Clerical Errors **Have You Our Literature?**

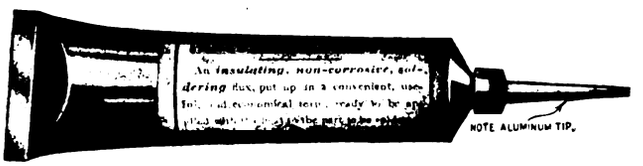
CALCULAGRAPH CO.

1437 Jewelers Building **New York City**

Agents for Canada: Northern Electric and Manufacturing Co., Ltd., Montreal.

PASTE and HEAT APPLIED SIMULTANEOUSLY

makes soldering easy. The aluminum spout can be stuck into the solder without clogging up. The collapsible tube

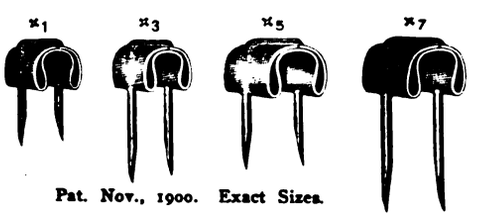


enables just the right quantity of paste to be squeezed on the work. Order a trial tube to-day. By mail, postpaid, 20 cents.

BARE STAPLES CUT THROUGH INSULATION

causing either a ground or short circuit. No matter how careful installers are, this will happen. The result is hours of labor and wasted material.

The fibre Insulation on Blake Insulated Staples insures against such accidents. Write for price list.



Pat. Nov., 1900. Exact Sizes.

BLAKE SIGNAL & MANUFACTURING CO.

246 SUMMER STREET : : : : : BOSTON, MASS.

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The American Telephone Journal

New York City, 100 William Street. *Copyright 1907 by The American Telephone Journal Co.* Monadnock Building, Chicago.

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VOLUME XV. SATURDAY, FEBRUARY 23, 1907. NUMBER 8

Convention of the Kansas Independent Telephone Association

THE sixth annual convention of the Kansas Independent Telephone Association, held at Topeka on February 5th and 6th, was a complete success from every point of view, In the first place there were 150 delegates present, representing almost the entire Independent telephone interest of the State; and in the second there was an enthusiasm noticeable which has never in the past been equalled at a meeting of the Association.

Every portion of the State was represented either by a delegate from the company covering that section or by an authorized delegate to whom was entrusted the duty of protecting the interests of the Independent telephone company issuing him the proxy. While Topeka is probably as nearly the center of the Independent telephone interests of the State as any other city, delegates traveled in mileage what in some instances would have amounted to several times the breadth of Eastern States in order that they might be present at the meeting.

Delegates to the Kansas Convention, Assembled in one of the Rooms of the New Independent Exchange Building at Topeka.

When the Bell people controlled the telephone situation in this country, Kansas and the tributary territory was one of their richest fields, and, as a consequence, the fight made against them by the Independent companies was necessarily of the most strenuous character. Every wile and tactic known to the old monopoly was brought to bear to break down the new companies which, mushroom-like, sprang up seemingly in a day.

These fights seemed to strengthen rather than weaken the Independent companies, and they are to-day stronger than ever before in their existence. At first the weaker exchanges were either bought up or compelled to cease their existence for lack of funds, but these tactics have availed the older company but little, and in spite of this fight the Independents have grown stronger every month.

The convention met in the handsome new quarters now almost completed for the use of the Independent Telephone Company of Topeka, at a cost of $35,000 for the building alone. The equipment will cost more than double that sum. The holding of the meeting in such a place was without doubt an inspiration to the delegates representing the smaller companies in the State who in the past have had a hard-fought battle against the telephone trust. While incomplete as to details, the building is one of the finest used exclusively for telephone purposes to be found anywhere in the country.

The business of the meeting was in a great measure of a routine nature, aside from the reading of a number of interesting papers by the members of the association. A delegate was selected whose duty it shall be to represent the association before the meeting of the State legislature, which is in session at this time. The executive committee of the association was also empowered to appoint a field agent whose duties are to be to care for the general interests of the members of the Independent Telephone Companies of the State.

The meeting was called to order by its President, W. H. Nelson, of Smith Center; F. M. Pearl, the secretary of the association, being absent, W. P. Hemphill, of Topeka, was made temporary secretary. The president, in calling the convention to order, called attention to the continued growth in the number of exchanges and a corresponding increase in the number of telephones in use, which has been maintained during the past year. This has been accomplished by the expenditure of vast sums of money, making this industry probably second in importance only to the great railroad interests of the State. This immense system is practically owned by the citizens of Kansas, and not controlled by any outside interests. President Nelson forcibly recommended the employment by the association of a competent, reliable man to look after the common interests of the members carefully and impartially. He called attention to the fact that all the State organizations which have been exceptionally successful have adopted this plan and are well satisfied with it.

Another important recommendation was that there should be provisions made for regular meetings of the executive committee at least quarterly, and their actual expenses paid while attending these meetings. Upon these gentlemen depends the actual business of the association, and they should not be compelled to give their time and pay their own expenses without remuneration. Attention was also called to the benefits which come to the State organization through its membership in the national association.

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In closing his address the president dwelt upon the services which the executive committee have rendered the association during the past year, and expressed the gratitude of the members for their earnest work, which has been so carefully and unselfishly carried on. After the conclusion of the president's address Mr. Dolan of Clifton moved that two committees of three members be appointed by the chair, one a committee on resolutions, the other a committtee on auditing. The motion was carried and the committees appointed as follows: Resolutions, J. M. Doyle, Chas. Henderson and A. T. Rogers; Auditing, C. L. Brown, H. G. Miller and J. S. Zimmerman.

After the appointment of these committees the president called on the several vice presidents who had been appointed at the last annual meeting held at Wichita to state the conditions of the telephone business in other territories, the progress which had been made in the way of the developments and the situation relative to the movements of the opposition. Good reports were received from many quarters.

Mr. Doyle, of Belleville, was appointed to represent the association before the Legislative Committees of the Senate and House of Representatives with reference to legislation pending affecting telephone interests.

After a thorough discussion, in which C. L. Brown, of Abilene; J. M. Doyle, of Belleville; C. J. Myers, of Kansas City, and others took an active part, the Executive Committee of the association was instructed to choose and employ some suitable person to be known as the traveling secretary, whose business it shall be to look after the various interests of the members of the Independent Telephone Association and to work under the direction of the Executive Committee. The Executive Committee was also empowered to fix the salary of the traveling secretary and to levy assessments against the members of the association to raise funds for the payment of this salary and all necessary expenses of the secretary.

W. P. Hemphill.

At the suggestion of B. F. Pankey, of Topeka, the convention extended an invitation to Senator Noftzger to appear before the convention and explain the purposes of telephone legislation of which he was the author.

So far there has been no legislation hostile to the Independent companies of the State introduced in the legislature with the single exception of a bill by Senator Noftzger. This bill is for the physical connection of competing telephone systems, similar to those which have been introduced in the legislatures of Texas, Missouri, Nebraska, Iowa and elsewhere, almost simultaneously and apparently originating from the same source, though this is denied by the author of the bill introduced by the Kansas senator.

Senator Noftzger appeared at the second meeting of the association and disclaimed all intention of injuring the Independent companies of the State and explained his reason for introducing the bill by a story not unlike one which could be told by any person who has been compelled to use a telephone line in a sparsely settled section of the State such as he represents.

He said: "I have attempted to communicate with towns adjacent to the one in which I live and in which there are no Independent lines and have been compelled to use the Bell line, which is the one controlling the business in the town of Anthony, where I reside. I have asked the Bell company to connect me with the people with whom I wished to converse, who in several instances happened to be patrons of the rival line, only to be told that such action was against the rules of their company.

"This may be right, but to me it seems to be a great wrong, and for this reason I introduced the bill, which, if it becomes a law, will compel exchanges to connect their patrons with those of rival lines. I have asked that telephone lines be declared common carriers and as such they will come under the supervision of the Board of Railroad Commissioners of the State and subject to such rules as they may make.

"I would not cripple the interests of the Independent companies in the State and when I introduced this bill I thought that they would be the gainers from my action if the bill should become a law."

After the injustice of such a law was made apparent to the senator he stated that he would so amend it that the bill will apply only to long distance connections, and it is even hoped that upon further representations the disadvantages of the bill may be made so evident to the legislature that it will be completely dropped.

While it is intimated that every effort will be made to introduce legislation hostile to the Independent companies in the State by a lobby which does not represent its interests, there is little hope from the opposition standpoint that such legislation will be enacted into laws. In Kansas the Independent companies, protected by just laws, have grown until to-day they are far more important than the Bell interests.

When Mr. Doyle, chairman of the Resolution Committee, made his report he presented a statement conveying to the officers of the past year the hearty thanks of the members for their work in behalf of the Independent telephone business of the State. Another resolution was as follows:

"*Resolved*, That we extend to the Topeka Independent Telephone Company our thanks for their efforts in making our meeting here pleasant and profitable, and offer our best wishes for its abundant success."

Thanks were extended to the city press for the fine and impartial manner in which they reported the proceedings.

These resolutions were all unanimously adopted as fitting expressions of the general sentiment of the convention. In an intermission in the routine business of the association Miss Ethel Pankey, of Topeka, read a paper entitled "The Importance of Good Operators" which covered the subject in an exceptionally thorough and interesting way.

The following applications for membership were received, together with the membership fee, and upon motion were accepted; Allen Telephone Company, Nortonville Telephone Company, Enterprise Telephone Company, Perry Telephone Company.

The election of officers for the ensuing year was taken up and Mr. Doyle, of Belleville, moved that the present president, Mr. W. H. Nelson, be re-elected. Mr. Doyle put the motion to the convention and it was carried unanimously. W. P. Hemphill, secretary and treasurer of the Topeka Independent Telephone Company, of Topeka, Kan., was elected secretary, and C. L. Brown, of the Brown Telephone Company, Abilene, treasurer.

The president appointed the following Executive Committee for the ensuing year: A. T. Rodgers, Beloit; J. E. Byers, Ottawa; C. C. Van Deventer, Kingman; C. E. Betts, Atchison, and J. M. Doyle, Belleville.

The appreciation of Topeka as a gathering place for the members and of the courtesies received from the company which operates there, was indicated by the passing of a motion expressing the opinion of the members that the officers should select Topeka for the next convention.

Topeka, the capital, is also practically the telephone centre of the State. The Independent company there, although but sixty months old, boasts of 6,000 telephones with toll lines connecting it with exchanges in all parts of the State as well as with all Independent lines in adjacent States. It was claimed at one time that an attempt was being made by the Bell company to buy up the toll lines of the new companies and purchases made at the time justified the prediction. Whether this was true or not the attempt was a flat failure and the Independent companies are stronger to-day than at any time in their existence.

The Independent company in Topeka, which is easily double the size of any other in the State, with its 6,000 subscribers, reports connections with many exchanges in Kansas and adjacent

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territory, new ones being added almost daily. The company has a full cable system with more than 250,000 feet of conduit already laid. It has not yet quite completed its new office building, in which the convention was held. This will be ready in about one month. The opening of this new plant is of great importance to all telephone users in the State. Of all the telephone exchanges in Kansas, it is said that 600, or more than 95 per cent., belong to Independent companies and new Independent exchanges are being installed as the growth of towns in the State will justify them. Practically all existing companies are growing rapidly. The Independent companies are just entering their era of prosperity and the end is not in sight.

Racking for Underground Cables in Central Offices

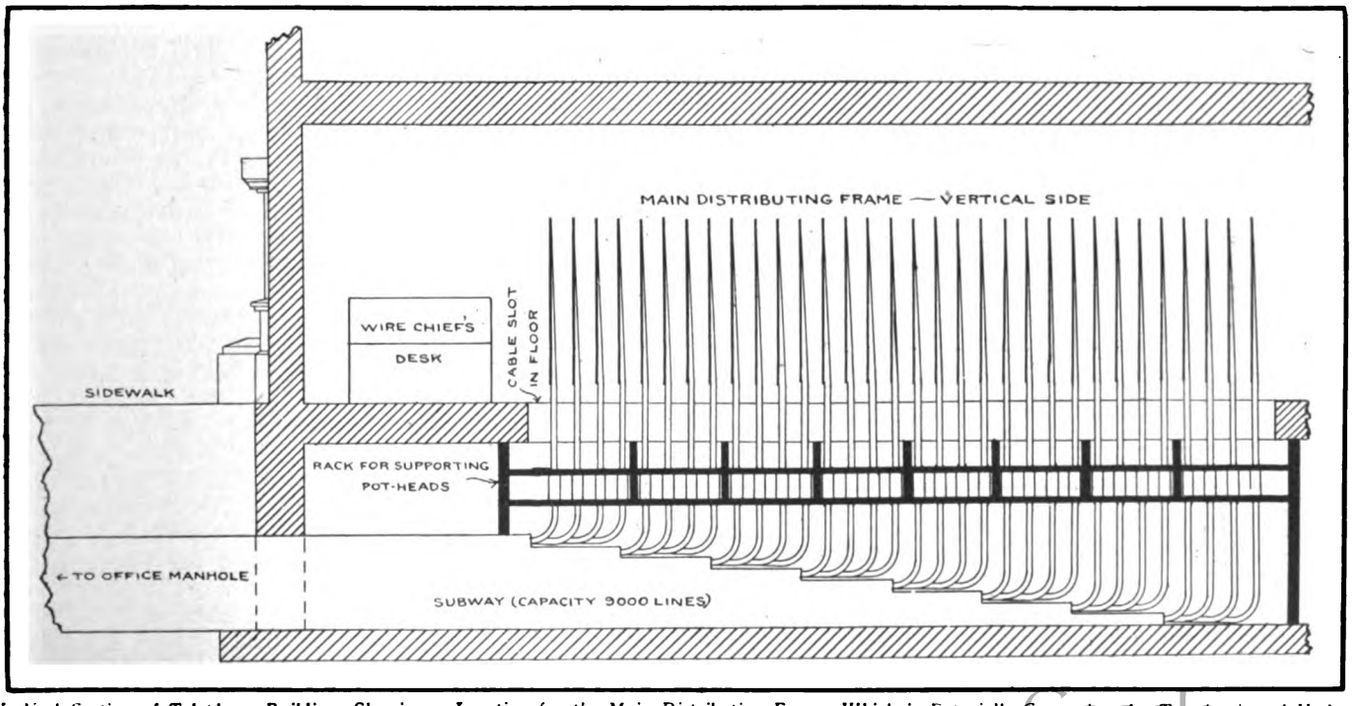
By Lewis F. Post.

MANY items must be taken into consideration when the apparatus in a new exchange is to be laid out. All depend more or less upon the kind of circuits to be used and the amount of available floor space. For some inexplicable reason engineers are very much inclined to give all portions of the plant precedence over the underground cable entrance. Usually they locate the main distributing frame in an out-of-the-way place so that it becomes extremely difficult for the underground cables to be carried to it without making long runs with many twists and bends.

Where long runs must be made in order to reach the main frame, specially constructed cable racks have to be designed to hold the cables. These racks must of necessity be spread out considerably so that access can be had from all sides to facilitate the work of pulling in and splicing up. This means that the rack takes up much valuable space in a large exchange that could probably be utilized to better advantage for some other purpose. Switchboard cables take up less room than lead-covered cables and can be suspended from the ceiling in small racks without taking up any floor space. On the contrary, underground cables cannot readily be laid side by side and suspended from the ceiling, owing to the difficulty that would be met with in installing and maintaining them. For these reasons, if not opposed by more urgent considerations it is likely to be advisable in a large exchange to place the main frame as near to the point of entrance as possible, even if the switchboard cables have to be extended a few feet more to accomplish the purpose.

A certain exchange in Philadelphia offers a fair sample of what happens when no provisions are made to properly support the underground cables. Here cables were supported on racks hung from the ceiling in the basement. The scheme worked well enough for the first few cables, but as the plant grew the bunch kept getting larger and larger until finally the first cables pulled in became so interwoven with the others that to-day practically every individual cable in the mass is inaccessible. This bunch of cables is largely made up of 300 pair units and it would be a very tedious and expensive piece of work to attempt to straighten them out. In this particular exchange, however, the main frame is close enough to the point of entrance; the mistake lies in the manner in which the cables were run from the subway and to an extent in the construction of the subway itself. Instead of entering on a level with the floor of the basement it enters only a little below the ceiling. If the main frame could be in every case located close to the point of entrance there would undoubtedly be a saving, due to the simplification of the work of the underground cable force. In many cases this saving would have so little expense in other directions to counterbalance it that it would undoubtedly be economical, and such an arrangement should always be at least considered.

A nearly ideal arrangement is shown in the drawing. The subway extends into a vault in the basement directly under the main frame. Each tier comprising four ducts terminates at a point sufficiently far from the portion of the main distributing frame to which it is to be connected to permit of turning the cables on an 18-inch radius and then running them straight up into their respective places in the main frame. Such an arrangement assumes that the cables are all of 300 pairs, and that there is a like number of lugs on the vertical strips of the frame. Each cable terminates in a pot-head which is fastened securely by clamps to a specially constructed rack. From the pot head rubber-covered wires are made into a form which is run up into the frame. The rack is fastened to the I-beams in the ceiling and is constructed of angle and channel steel. No splicing outside of that which is done on the pot heads is permitted in the vault.



Vertical Section of Telephone Building, Showing a Location for the Main Distributing Frame Which is Especially Convenient for Termination of Underground Cables. Arrangement of Cable Ducts and Racking for Potheads is Indicated Below the Distributing Frame.

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All cable throws and splices are made in the manhole, which is designed especially for the purpose, being located directly opposite the exchange.

WISCONSIN TELEPHONE MEN FORM DISTRICT ORGANIZATION.

RICHARD VALENTINE was made temporary chairman, and Alfred Slater, of Beloit, was made temporary secretary at a meeting of thirty-five representatives of Independent telephone companies of the first congressional district of Wisconsin, who met at Janesville to form an association to cooperate with the state organization, and take such steps as will assist in more perfectly unifying the Independent systems of the State.

After consideration of various matters before the association, the following officers were elected: President, H. A. Moelenpah, Clinton; secretary and treasurer, F. C. Grant, Janesville. Among the delegates present at the meeting were C. H. Wisnell, L. R. Whitman and W. B. Eles, of Elkhorn; John C. Morchek, of Brodhead; C. B. Frenning, of Monroe; Alfred Slater, of Beloit; E. T. Cass and A. J. Warner, of Whitewater; O. L. Woodward and H. H. McCullough, of Clinton; A. L. Moore, of Brodhead; W. H. Pellington, of Sharon, and Clarence Jordalen, of Stoughton.

Principles of the Telephone*

By Arthur Bessey Smith, Department Telephone Engineering, Purdue University.

IN the past few years there has been a great advance in the simplification of the subscriber's instrument. In the local battery telephone as above described there are two complete power plants, each subject to its own troubles. If some means could be devised to remove these power plants from the instrument leaving only enough apparatus to control the power which may be supplied from the central office, it would greatly reduce the cost of operation and the inconvenience to users from troubles. This has been done in the modern common battery system, sometimes known as central energy. The plan of feeding battery current for talking purposes is shown in Fig. 5. This is the Hayes system, used by the Bell companies. The battery, *B*, consists of eleven cells of storage battery, giving from 22 to 24 volts. R_1 R_2 R_3 and R_4 are four separate windings which are on the same iron core. Through R_1 and R_2 current is fed to the telephone at the left, which is typified by a transmitter and a receiver in series. If words are spoken into the transmitter of the left hand telephone, its resistance will change so as to cause the current to undulate. This undulating current flowing through R_1 and R_2 will generate an alternating current in R_3 and R_4 which will flow over the line to the right hand telephone and reproduce itself in the receiver in the form of sound. The key to the whole action lies in the transformer-like performance of the coils, and for this purpose they are of necessity wound on the same core as stated. The term "repeating coil" has aptly been applied to this coil as the current is repeated from one circuit into the other by its means.

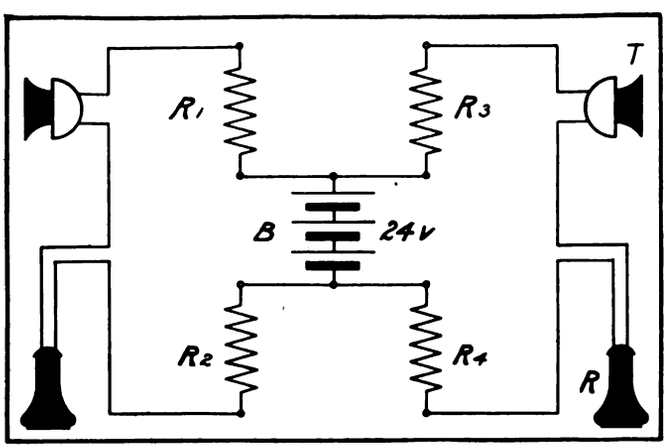

Fig. 5. Simplified arrangement of two telephones connected through common battery cord circuit.

The system of battery feed used by Independent telephone companies is known as retardation coil feed, and is shown in Fig. 6. The same kind of battery is used, but instead of four coils on the same core, there are employed four separate cores, each with its own winding They are connected in much the same manner as the Hayes system, R_1 and R_2 feeding battery to the left telephone and R_3 and R_4 to the right. Connected between the outside terminals of R_1 and R_3 is a condenser, *C*, which is made of alternate layers of rice paper and tinfoil. Another condenser is connected between the similar points of R_2 and R_4. If one of the transmitters is disturbed, its changes of resistance will cause the current to undulate, but owing to the high self-induction of the four coils, the alternating part of the current will take the easier path through the condensers to the telephone at the far end of the line. There is practically no leakage of talking current through the retardation coils. Two types of telephones are shown here, both of which are quite widely in use. On the right is the type which employs merely an induction coil, whose primary is in series with the transmitter. The secondary is connected with the receiver in a local circuit. For several reasons it is best to keep the battery current out of the receiver, and this use of the induction coil is one of the ways of accomplishing it. At the left of the figure is another way of doing it. In series with the transmitter is a retardation coil. Shunted around the coil are the receiver and a condenser in series with each other. The condenser keeps the battery current out of the receiver, while allowing the high frequency voice currents to pass with readiness.

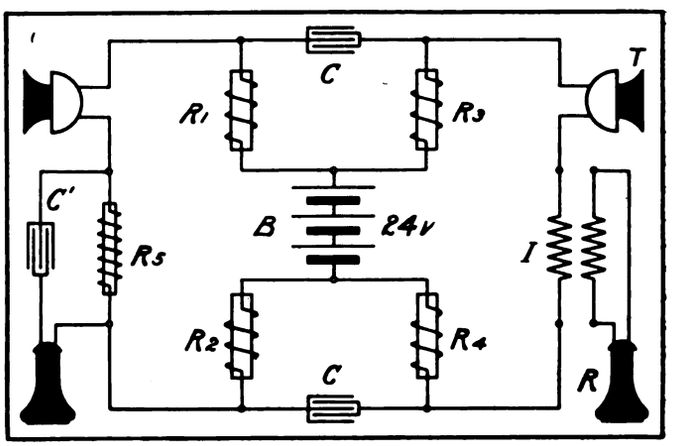

Fig. 6. Simplified circuit for distributing battery current to telephone instruments through retardation coils.

One of the most ingenious schemes for keeping the battery current out of the receiver while still allowing the talking current to pass has been brought out by Mr. William W. Dean. He has adapted the principles of the Wheatstone bridge, as shown in Fig. 7. *A*, *B*, *C* and *D* are four coils, *R* is the receiver, *T* the transmitter, and L_1 and L_2 are the line binding posts to which are connected the wires coming from the central office, and which supply battery current to the instrument.

Let us suppose that the battery current comes in at L_1, divides at 1, part flowing through *A* and *C*, part through *B* and *D*, reuniting at 2 and returning through the transmitter, *T*, to the

*Abstract from a paper read before the Indiana Engineering Society, Jan. 19, 1907, continued from the issue of Feb. 16th.

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other binding post, L_2. The four resistances have a proportional relation so that $A:B=C:D$. Under this condition the points 3 and 4 will have the same potential and no battery current will

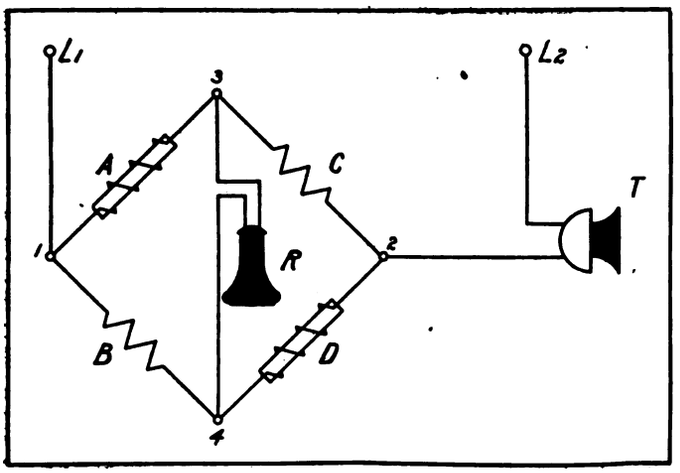

Fig. 7. The "Wheatstone bridge" talking circuit for a common battery telephone.

flow through the receiver, since it occupies the same relation to the resistances that the galvanometer does in a testing set. If the four coils were equally non-inductive, as would be the case if they were made of German silver and wound back upon themselves, the alternating voice currents would divide also, and the receiver would not get any sound. But the coils A and D are made of copper wire wound inductively on an iron core, so that they will have a very great tendency to choke out or impede the passage of high frequency current, thus forcing it to go through the receiver. Thus we have a telephone set in which the battery current is kept out of the receiver, yet the voice current finds ready access, and this is accomplished solely through the ingenious arrangement of properly proportion resistances and inductances, without the customary condenser.

One of the good points in this instrument is the ease with which trouble is located. A further point is that in case of a failure of the receiver circuit, from either a break in the wire or the short circuiting of the receiver, the subscriber can still talk to central, although not hearing, and the trouble be thus reported.

ILLINOIS INDEPENDENT TELEPHONE MEN MEET AT SPRINGFIELD.

DELEGATES to the annual meeting of the seventh district of the Illinois Independent Telephone Association recently met at Springfield. Telephone men from fourteen counties of the State, representing fifty companies, were present. C. B. Cheadle, of Joliet, secretary of the State Association, and W. H. Bassett, of St. Louis, assistant general manager of the Kinloch Long Distance Company, were present and addressed the members. The sessions which were held were devoted to general discussions of matters connected with improvement of service, construction and operation, and reports of the progress made by the different companies. When the election was held the approval of the work of the officers who had served during the past year was indicated by their re-election as follows: President, W. H. Ramsey, Auburn; secretary and treasurer, F. W. Kelly, Springfield.

WHAT NUMBER?

MIKE DOYLE had charge of a number of horses for a large Cleveland establishment, and, although he had no assistants, he styled himself as Barn Boss.

One morning a few months ago, he suddenly discovered that his stock of feed was pretty low, and hurrying to the telephone he called up the Cleveland Milling Company.

"Hello, Miss, Main 433, if you please, Mam."

"Is this the Cleveland Milling Company?" was the next query.

"Yes," said the voice at the other end of the line.

"Take this ardor, sir," continued Mike.

"All right; go ahead," said the man.

"Twinty bushel oats. Have you got that? Five bushel ear corn, five bales of straw, and a half a ton of hay. I don't want any of that loose hay that blows all over the yard; sind me that pounded up in bundles like a shredded wheat biscuit, ye know. And, see here, me good man, sind that ardor down right away. I haven't a sup in the place for the horses whin they come in this evenin'."

"I'll attend to that," answered the man.

"All right, sir, goodbye," replied Mike, getting ready to hang up the receiver.

"Hold on, hold on!" shouted the man at the other end of the wire. "You haven't told me who this is for."

"It's for the harses, ye bloody fool," responded Mike; "did ye think I was going to eat it meself?"

The Telephone Operator

An Agent of the Public Service who Hourly Receives Hundreds of Orders, Makes the Goods, and Delivers them Instantaneously.—The Girl and the Job.

By Miss E. Keech.

IN these days of modern conveniences, when one wants to do or say a thing in a hurry, his first impulse is toward the telephone. Quickly he picks up the receiver, gives a number, is answered, and in a twinkling the message is delivered. This is done with so little effort on his part that one hardly ever considers how much of his happiness depends upon the operator at the other end of the line—waiting, watching, listening—ever on the alert! How easy it is to straighten out a hundred difficulties every day with the help of the telephone. That lost package is located; Jane must consult Harry about "to-night"; deliveries are hastened; orders given butchers, bakers, florists and grocerymen, social affairs are arranged, firms located, telegrams sent, and even the time of day ascertained. Indeed, the telephone girl takes the place of all sorts of special "Bureaus of Information," with the advantage that questions are answered at once.

Now the average person who has never seen a large telephone exchange is apt to think of it as a place of turmoil and excitement, on the order of a stock exchange, with a babel of loud voices, mobs of people rushing to and fro, and a general atmosphere of wild excitement. On his first visit he is surprised at the air of serenity and calmness pervading the room. There is no visible rush, no excitement, no pell-mell moving about, only the constant hum of low voices and the incessant weaving in and out of the connecting cords. It is only by this order and discipline that the vast amount of business is handled every day. Still it soon becomes evident that, orderly as may be the manner of doing the work, the work itself is, in a large exchange, not of a sort which can be well done by a careless or unintelligent person. The operators sitting at the switchboard have before them several keys—red, black, and shiny steel—each kind of key meaning something different. Above the table are hundreds of tiny holes, for all the world like a huge honeycomb; each hole, or jack, means a subscriber, if open and unmarked, but when not open it may mean any one of a dozen things—as if it contains a white plug it signifies the number has been changed; a black plug means discontinued service, a red plug service temporarily discontinued, and so on. As the observer takes in all this detail, he sees first in one place and then in another the tiny lights

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flare up, burn for an instant, and then go out. All this seems but a by-play, going on gaily as the operators say "Number, please" and connect the jacks all over the front of the board, each operator a modern Penelope, patiently weaving threads of conversation in and out.

Every morning the operators assemble in the various exchanges and go quietly to their work. There are short girls, tall girls, thin girls, and fat girls; dark girls, blonde girls, and red-headed girls; girls with bows, girls with curls, and girls with pompadours; big girls, little girls, and all sorts of girls. Now, care must be used in the selection of these operators, for the telephone operator, like the poet, is born and not made. There are a few general requirements necessary, or she can never fill the bill. She must be quick of comprehension, have an active mind, and be able to talk. However, being girls, few have any difficulty on the latter score. If a girl has the nonchalant, languid air of a bored society woman, she will never make a successful operator, but if she has the brisk, alert manner of a woman at a bargain-counter, buying a five-dollar shirtwaist for ninety-eight cents, then she will make an excellent one.

Even after a careful selection, however, much thought is required in order to keep the operators ready to give thorough and efficient work at all times. In a well-managed company great consideration is given their comfort and happiness. Their surroundings are bright, cheerful and attractive. Each girl is provided with a locker for her personal belongings. A comfortable retiring-room is furnished with chairs, couches and tables, and books, papers and periodicals are placed there to amuse the girls during their relief periods. In a lunch-room, a matron supplies them with coffee, tea or milk at the company's expense.

The training of the operators also requires as much care as the selection. Before the girls become skilled and efficient operators they must learn many things. First of all, they must become familiar with the names of the various parts of the telephone, as transmitter, receiver, etc. They must learn all about the switchboard, and the different sorts of jacks. They must learn how to use the cords to connect subscribers, and the significance of the different colored lamps. They learn about order wire buttons, pilot lamps—and perhaps a truly attractive thing—how to use the listening key. They also learn the language peculiar to the telephone operator, brief but explicit, quick but courteous, which has proven so convenient that it has become almost universal. The story is even told that a minister recently startled his congregation by announcing "Sing hymn double-one-o-six."

These things a telephone operator must learn are not easy by any means at the start, but after she has once mastered the details of the service, what a girl has to do and say is very simple. Each thing must, however, be said or done in exactly the right way by each operator. When a number is called, she must give that number only, for this is a case where "one just as good" will not answer.

Business men, accustomed to rapid and uniform service, are too likely, in many cases, to consider the telephone operator merely as a piece of machinery. This attitude is likely to be the cause of many things which try her patience. People are not all considerate of her; if they can not get a number at once, they frequently lose their temper, speak harshly, when many times it is not her fault at all, but some mechanical or electrical trouble with the line.

A rather humorous affair occurred recently which greatly overtaxed the operators on certain lines and caused a good deal of extra trouble. A local Zoo enterprisingly sent out postals to people all over the city, asking them to call up say "South 2337" and asks for Mr. Camel, or A. Lyon, A. Baer, etc. The credulous public was easily taken in, the specified number called, and the line was hot with calls for several days. It was a good advertisement, but rather hard on the telephone operator.

In spite of difficulties, the operators in general seem to like their work, and seldom change their occupation; or if they do, are extremely likely to return to it. Of course, allowance must be made for those who get married, and those promoted to better positions. They find their work interesting and fascinating. There is always room for advancement, which appeals to the ambitious girl, as she knows promotion depends upon herself and her ability. While they are in a way secluded, they are still in touch with the whole big city outside. They enjoy the companionship of other girls, and like their surroundings. Taken altogether, their life is not an unhappy one, and is far better than that of people engaged in many other occupations.

Safeguarding a Telephone Canvass

By H. L. Davis.

INDEPENDENT telephone companies commencing the operation of a new exchange need to profit by the experience of older organizations no less in the soliciting and contract departments than in other branches of their business. In nearly every case where poor results are obtained in these departments responsibility may be traced to the manager, being due to his failure to take proper precautions in the selection of solicitors.

To emphasize the importance to telephone companies of avoiding such a mistake, the writer believes that the experience of a certain Independent company in New York State may be useful. This company planned a regular soliciting campaign, but employed to manage its soliciting department a man whose experience was limited and, he, in turn, employed inexperienced solicitors. All that was expected of these solicitors was that they should secure not less than a certain number of subscribers each day and the kind and class of subscribers whose signatures they brought in was not considered. The result was that the solicitor, in order to get the required number each day, accepted contracts which represented all kinds of undesirable business. In many cases a name was secured on a contract through sheer trickery, the solicitor making the signer believe that he was only signing a petition to permit the company to construct lines on the street, or for some other purpose which he did not fully understand. Signers were also made to believe that the telephone was to be installed free for a year or more, or that the instrument would be installed on trial and be removable without any expense to the user. This was not even the worst of the frauds practised, for in many cases names were taken from the city directory, and written on the contract by the solicitor himself without having called on any of the parties.

A great many of the subscribers whose names were secured were people in poor circumstances who could not afford a telephone at any price. When a telephone was actually installed in the homes of such persons the company was compelled to submit to another useless expense in its final removal. No great effort was made to secure the better class of people as subscribers, and the result was that when the company commenced operation the best business places would not subscribe for the reason that they could not reach the places they desired to talk with most. Great expense was incurred in constructing lines to all of the persons improperly represented as subscribers, and many of these lines were vacant for several years.

The company was finaliy compelled to engage experienced solicitors to save the best of the subscribers who were secured by misrepresentation, and to secure genuine paying subscribers along the lines already built. After much hard work on the part of expert men the subscription list was built up to nearly 3,000. Had the company engaged these experienced men in the first place, they would no doubt have started the exchange with at last 4,000 subscribers and would have been in much better shape financially. There have been hundreds of other companies throughout the country who have gone through a similar experi-

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ence, and who could add many facts as to the underhanded methods used by men employed in such work. Such stories would only be additional evidence to prove what is already evident to any thinking manager, namely, that dishonest solicitors are a curse to any company, and by engaging them many companies have been greatly handicapped and some times financially ruined.

There is no department connected with the telephone exchange more important than that which handles the soliciting and, this being a fact acknowledged by experienced telephone men, it is surprising that so few companies are careful in the selection of a man to manage the department. The man in charge is responsible for all of the work done by solicitors, and if they do not thoroughly canvass the city and secure the best people as subscribers or if they secure business from irresponsible people, or by deceit or trickery, it is his fault. In such an event he should be condemned and the result of his work made known to other companies and to the telephone journals so that they can inform their readers and warn all those contemplating engaging men for such work of the particular forms of deceit which have been practised. Honest work should also be made known so that telephone companies can profit by good methods. In this way the Independent companies will be greatly benefited.

Proper conduct of a canvass requires that every contract be verified before being accepted by the company. This can be successfully done in many ways, and an experienced contract agent who has the best interests of the company at heart can and will establish a satisfactory system.

THE INDIANA LEGISLATURE CONSIDERING MEASURE WHICH WILL REGULATE TELEPHONE COMPETITION.

A BILL has been introduced in the Indiana Legislature, with every prospect of being enacted into law, the primary object of which is to prevent rich and powerful corporations from indulging in "cut throat" methods to destroy competition.

The bill, in effect provides that if a franchise corporation, having competition in its home field, reduces the price of its service or commodity the new figure shall during the remainder of the life of the franchise be the franchise price and the company is prohibited from increasing it.

While the bill offers similar protection to all franchise corporations, it is said to be primarily aimed at the Central Union Telephone Company, and will prevent that company from further practices of reduction of rates until competition is destroyed with a subsequent return to the old monopoly or franchise rate.

HEAD GUYING AND SLEET STORMS.

RECENTLY in an Illinois town a telephone company suffered heavily from the destruction of its lines during a sleet storm. Where the lines were run practically straight for a distance of four miles a great many of the poles went down. The manager of the company states that he believes that a few extra precautions in the way of head guying would have been useful in diminishing the loss. He advises that telephone companies, when building a long, straight run will do well to bear in mind that the line may some time be called upon to support a weight far beyond that of the mere wires.

DATES FOR REDUCED RATES TO IOWA INDEPENDENT TELEPHONE CONVENTION.

AS announced in earlier issues, reduced railway rates have been granted from points west of Chicago to all telephone men who attend the convention of the Iowa Independent Telephone Association, which is to be held at Sioux City, Ia., on March 19th, 20th and 21st. Application for the special fare may be made on and after March 16th, and the reduced rates hold good for the return trip up to and including the 3d of April. In order that a purchaser may secure the round-trip fare at one and one-fifth times the regular one-way rate he must take a receipt at the time he buys the ticket from his home agent, and full fare must be paid for the ticket. Before he returns to his home he can go to the secretary of the Passenger Association at Sioux City, and upon payment of 25 cents can obtain a certificate which will entitle him to return home for one-fifth fare. A great many telephone men are arranging to take advantage of this reduced rate, as it will enable them to take part in the exceptionally interesting proceedings at the convention at a very low cost.. The best investment any company can make during the year is to send at least one representative to this meeting.

INDEPENDENT TELEPHONE MANAGERS OF HILL COUNTY, TEXAS, REPORT PROGRESS.

AT Hillsboro, Texas, there was called on Feb. 9th a meeting of the managers of Independent telephone companies operating in Hill county. Among those present were: H. H. Davenport, secretary and general manager of the Hillsboro Telephone Co., Hillsboro; W. H. Legan, Citizens Telephone Co., Itasca; W. D. Smith, Bynum Telephone Co., Bynum; J. R. Thaxton, Malone Telephone Co., Malone; W. W. Henson, Jesse and Kirby Telephone Co., Jesse; F. L. Latham, Aquilla and Whitney Telephone Co.; Lee Kirkpatrick, Lovelace Telephone Co., Lovelace; W. H. Legan, Abbott Telephone Co., Abbott. These gentlemen represent 2,145 telephones in Hill county. The first business of the managers was to organize themselves into a permanent association, electing Bud Terry as chairman and H. H. Davenport as secretary. Mr. W. D. Smith of Bynum, Mr. F. L. Latham, of Whitney, Mr. W. H. Logan, of Itasca, were chosen as an advisory board.

Discussion of various points in connection with the operating of the systems added to the information of the individual members in a way which brought out clearly the benefits to be derived from forming an association. Reports from all the managers in all parts of the county showed that the growth of their business had been good. In Hillsboro both city and rural lines are being rapidly extended. At the close of the meeting the visiting telephone men were the guests of H. H. Davenport, manager of the Hillsboro Telephone Company, at an enjoyable dinner.

WISCONSIN INDEPENDENTS TO PREPARE FOR EXTENDED TOLL SERVICE AT NEXT MEETING.

THE adjourned annual meeting of the Independent Telephone Association of Wisconsin will be held at Madison, March 7th and 8th, 1907, at which time will be perfected the organization of district associations, as auxiliaries to the State association, in the manner followed in Ohio, Indiana, Michigan and other States.

At the previous meeting in Madison on Jan. 17th and 18th, committees on District Organization, Clearing House, Nomination and Membership were elected by the delegates. Representatives from each congressional district have organized in each of their respective districts, so that a complete and perfected organization will assemble at Madison on March 7th and 8th in Turner Hall for the completion of important details relative to the building of long distance trunk lines by the Independent Long Distance Telephone Company of Wisconsin, the compilation of statistics and the election of officers for the coming year.

The representative of each district is instructed and requested by W. F. Goodrich, the secretary of the association, to bring a map or sketch of his district, showing all Independent lines and the number of telephone users, that a comprehensive system of toll lines may be established at once.

With the prospects of an early spring, this meeting will mark the beginning of important developments in the Independent field in Wisconsin.

LAWSUITS ARE EXPENSIVE.

A LAWSUIT involving the sum of twenty-five cents has been tried at Spencer, Iowa. The cost of the suit amounts to $114.80. The case grew out of a twenty-five-cent telephone charge. The Western Electric System was the plaintiff and Knox Walters the defendant. A stranger used the telephone in Walters' livery barn to talk to a neighboring town, and the telephone company claimed that Walters guaranteed the charge, sued him for it, and finally obtained judgment.

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THE EDITOR'S PAGE

SERVICE TESTS AND HYSTERICAL NEWSPAPER REPORTING.

IN a certain northern city the conditions in the operating rooms of a rather unpopular telephone company are being investigated.

Incidentally the fact has been brought to light that each day a certain number of lines are connected to the desk of an operator who "listens in" and takes notes concerning the nature of the business transacted and other details of importance to the public. Newspaper men, for once, have seemed to miss the significant feature of this work, and are attempting to make a sensation of the violation of the assumed right which the telephone users have to carry on a secret conversation.

Perhaps there is no feature of the work of a telephone company which is less understood than that in the operating and traffic departments which leads directly to the improvement of the service. Although the introduction of the common battery switchboard, with its line lamps and double supervisory signals made possible great advances in the spread and accuracy with which connections were made, these possibilities were by no means realized until the development of traffic studies along what have come to be recognized as standard lines. In the prosecution of this work the regular recording of observations made by "listening in" has been of the greatest value. From these observations, as is well known, telephone men are in the habit of making up statistical tables, which furnish data for the traffic department without ever giving details of actual conversations.

The commodity in which a telephone company deals is traffic, and any business man should realize the absolute necessity which compels a concern to know, as nearly as it may, the nature of the product which it sells. Service observations alone have furnished the data which enable telephone companies to improve the efficiecncy of their operating, plan for the appropriate and economical extensions of their plants, and adjust complaints on an equitable basis. With the thousands of conversations overheard by operators under these circumstances, there are very few cases of injury to the interests of a subscriber arising from the giving out of information. The only cause for complaint seems to be a sentimental one, while opposed to such grounds are all the sound arguments based upon the utility of this method of improving the service. It is a pity that so valuable a department of research should be the object of sensational reports intended to appeal to the prejudices of imperfectly informed persons.

PATENTS AS SOURCES OF GENERAL TECHNICAL INFORMATION.

YOUNG men who are engaged in those branches of telephone work which require a knowledge of electricity realize that in order to promote their own advancement they must acquire as quickly as possible a large amount of technical information. No matter to what position their ambitions lead them to aspire they will be likely to have occasion to use such knowledge frequently. In looking for practical technical discussions in published works a great many of these young men overlook one of the most valuable fields. This is the descriptive matter included in many United States patents.

Whenever a patent is granted on any device the inventor is obliged to give such a description of the method of operation as is necessary to enable any person having an elementary knowledge of the art in question to clearly understand the new invention. In telephony, as in most other branches of electrical work, most advancement in the way of new designs, comes, after all, not from the discovery of new principles, but rather from designing new methods of applying old ones. For instance, in telephone circuits there are a certain number of what may be called elementary electrical or electro-magnetic principles. A relay, for example, owes its existence to the fundamental facts that when a coil of wire surrounding a bar of soft iron is traversed by an electrical current a magnetic field is created, and than any piece of movable soft iron in such a field tends to so change its position as to shorten the lines of magnetic force which pass through it. Beyond and built upon these fundamental principles there are a certain number of other principles, or basic combinations of principles, which are practically confined to telephone work. Among these may be mentioned such devices as the use of a condenser to permit the passage of alternating current, while shutting off battery current; the use of a repeating coil for various purposes; the use of a shunt circuit for controlling the operation of relays, etc.

It is with schemes of this latter class that the student is especially concerned. He needs to know how they are built up from the elementary principles, statements of which can be found in his text-books, and he must learn how they fit into the general plan of a telephone plant. Very much information of this sort is contained in patents, and, contrary to a rather wide-spread impression, is likely to be very clearly set forth. It is true that the portion of a patent which sets forth the claims of the inventor suggest a legal phraseology rather than that of technical literature, but this is by no means likely to be true of the descriptive portions of the document.

An example showing a special case in which general information is obtainable from a patent may serve to bring out the usefulness of this source. A young man in a city served by a single common battery exchange may be totally ignorant of the general method of operation which is essential for a trunking circuit between two common battery offices. He may not even know how orders for the use of these trunk circuits are passed from one exchange to another over a special "order wire." As to the actual circuit details which will satisfy the operating conditions he is almost sure to have a very hazy set of ideas. Almost any patent granted for a trunking circuit will contain a great deal of useful and reliable matter which will enlighten him on many of these details. Numerous other examples branching into widely different divisions of telephone work could be cited, all emphasizing a similar point.

In considering this plan for extending his knowledge, it is important that the student should not overlook the question of cost. While the price of a copy of a single patent, which any one may obtain by writing to the Commissioner of Patents, at Washington, is only five cents, any person who should attempt to secure every patent issued for a device having a bearing on telephone work would find the cost in a year rather larger than the expense justified by the benefit which he would be likely to gain. The best way for him to do would be to carefully choose after an examination of a well-prepared digest of patents, the numbers of those which may be safely assumed to contain general descriptive matter. Any one who attempts this will soon come to have a fine discrimination in the matter of names as well as in subjects. As the patents containing the clearest descriptions are likely to be those prepared for the most successful manufacturing companies, their possession brings the added advantage which is due not only to a certain measure of assurance as to their correctness, but also that which is derived from the knowledge that they are applied to devices which are in actual operation, and which the student is likely to meet in the regular course of his work.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

THE SPECIAL FRANCHISE TAXES OF NEW YORK.

We understand that the law of the State of New York making all franchises for the use of streets, highways, and public places, or mains, pipes, tanks, conduits or wires for any purpose taxable as special franchises and to be deemed real property, has been passed upon by the Supreme Court in a recent decision. We should be very much obliged for a statement by you in the columns of THE AMERICAN TELEPHONE JOURNAL of the construction put on this law and whether the act was held to be constitutional. H. F. C.

THIS law has been recently sustained by the United States Supreme Court (25 Sup. Ct. R., 705). The contention against the validity of the tax has been that it impaired the obligation of the contracts under which these franchises were obtained. In many cases, the companies had paid a gross sum to obtain a franchise or were required to pay annually either a fixed amount or a fixed percentage of their earnings, and these companies contended that such payments were all that could be required of them on account of their franchise. The court overruled this contention, holding that the contract did not provide that these payments were to be a substitute for taxes. Because the State had not purposely relinquished the right to tax them, what the companies had paid for the franchise did not raise any implication that the State had relinquished its power to tax this property the same as any other property. This case did not arise in litigation to which either a telephone or telegraph company was a party, but the same ruling would naturally apply to all companies governed by the act.

WHEN COMPANY IS EXCUSED FROM ERECTING GUARD WIRES.

A break in our wires occurred during a great and unusual sleet storm with the result that one of our wires fell on an electric wire that crossed it horizontally, the end falling onto the highway. A horse belonging to a farmer that lived nearby was killed. He now claims that our company should pay for the horse because there was no guard wire between our line and the heavily charged wire of the lighting company. Please tell us whether it is always a rule that guard wires must be maintained where telephone wires cross wires belonging to other companies. T. M. C.

THERE is no such general rule known in the law. The principle that it is the duty of electric companies to erect guard wires extends only so far as to declare that it must be done when the circumstances render it advisable for safety. Where it is not customary to erect guard wires nor practicable to do so, companies are not bound to maintain them. Aument vs. Penn. Tel. Co.; 28 Pa., Super Ca., 610.

PERCENTAGE ON RECEIPTS FOR TOLL LINE SERVICE OUTSIDE THE CITY UNCOLLECTABLE AS A FRANCHISE FEE.

THE City of Lancaster, Mo., brought suit against R. W. Briggs, the holder of a franchise, to recover certain money alleged to be due the city as payment for the privileges given by the franchise. The ordinance which granted the franchise provided that grantees "agree to pay to the city 2 per cent. per annum of the gross receipts collected from the use of the city telephone system." The company was required to make affidavit to the amount of receipts as a basis for figuring the percentage due. The company reported only such receipts as were derived from the rental of telephones in the city, but the city insisted that the words "gross receipts collected from the use of said telephone system" should include earnings received from long distance service rendered by the telephone company to the patrons as well as rentals collected for telephone use in the city. The court held that the gross receipts intended to be used as a basis for figuring the franchise tax referred to the system "within the present and future corporate limits of the city" and expressed the opinion that the ordinance left no room for doubt that the city agreed to restrict its charge to the earnings of that part of the company's system within the city limits. The earnings from toll business over long distance lines connected with Lancaster and other cities and towns would not be included, but the court held that the parties intended that earnings from all sources within the city should be included in the term "gross receipts." These earnings, it was decided, consisted of rentals, of not only telephones in the city, but also the percentage received by the company as the proceeds of toll line business that required the service of the Lancaster exchange in its transaction. Judgment in favor of the company was reversed by the Kansas City Court of Appeals, and the case sent back for a new trial. City of Lancaster vs. Briggs, 96. S. W.; 314.

WHEN DESTRUCTION OF A FENCE IS MALICIOUS.

IN Mobile County, Alabama, a suit was brought against a telegraph company for trespassing upon the property of an adjacent owner, the trespass being alleged to be the cutting down of timber and the breaking down of fences, and piling brush and debris upon the property of the owner. The evidence in the case showed that the plaintiff's fence was cut and destroyed in several places, and that the doing of this was not at all necessary to the repairing of the telegraph company's lines. The plaintiff recovered what are called punitive damages, or damages by way of punishment, in addition to the damages he proved that he had actually suffered and the Supreme Court of Alabama, in reviewing the case, held that the recovery was proper. Western Union Telegraph Co. vs. Dickens (Ala.) 41S., 469.

COMPANY MAY PROTECT ITSELF AGAINST USE OF TELEPHONE FOR ILLEGAL PURPOSES.

We have very good reason to suspect that a certain applicant for our service is engaged in keeping a gambling establishment, and wants the instrument to connect with a nearby saloon from which any attempt to raid his establishment could be observed and warning given. We cannot prove this to be the fact as you can see, but the situation is such that we think it is undoubtedly the case. We want him to give us assurances that the telephone is not to be put in his gambling rooms, but he refuses to promise us anything in this line, and practically says it is none of our business. What are our rights in the matter? H. J. B.

A TELEPHONE company is not obliged to furnish its services for illegal purposes, and in fact is prohibited from so doing. It may therefor require assurances from any intending subscriber, and if they are not given, may refuse to install a telephone. It is not necessary that the company should have absolute proof of the intention to use a telephone for illegal purposes. It might properly insert a clause against the use of its instrument for improper purposes in the contract, and it would be entitled to refuse service if the contract was not signed. If any additional and unusual assurances are required against improper use, the evidence upon which the company based its requirements would have to be sufficient to warrant suspicion. Cullen vs. N. Y. Tel. Co., 106 App. Div., 250, 94, N. Y. C. 290.

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QUERIES

NOISE FROM GASSING OF STORAGE BATTERIES DURING CHARGE.—(824.)

Under date of November 24 Samuel Ferguson writes in your journal regarding mercury arc rectifiers and in the article states that the noise induced in a telephone exchange by use of such rectifiers is even less than the noise caused by normal gassing of the batteries when under charge. by other sources.

Will you kindly arrange for me to learn in what way gassing causes noise in a telephone system and if it is really so. A. E. C., Calif.

The noise produced in telephone circuits by the gassing of a storage battery under charge is entirely different in character from that produced by the charging source, generator or rectifier.

The forming of large bubbles of gas on the electrodes and their sudden detachment as they seek the surface of the electrolyte causes repeated slight changes in the internal resistance and E. M. F. of the cells. This produces a crackling noise intermittently in the attached telephone circuits. It is claimed by advocates of the rectifier that owing to the fact that the current delivered to the batteries by this equipment is pulsating and dies away to nothing after each pulse, instead of being practically continuous, as in the case of the generator, the gassing is much more uniform and the noise is consequently reduced. The theory is that the cessation of current between pulsations permits or rather causes the gas to be liberated in smaller bubbles at more frequent intervals. This is a question altogether apart from a comparison of the intensity of the hum, or musical note due to the frequency of conversion or rectification with the noise introduced by the action of the commutator of a well-designed charging generator.

CODES FOR RURAL LINE RINGING.—(825.)

Will your readers kindly give the best method for arranging rural line calls so that directory numbers will indicate line and ring?

In response to this inquiry, published last week, we have received a great variety of codes, some of which are published herewith. We shall be glad to have readers send any new ones, and in each case set forth any advantages and disadvantages observed in the operation of the systems.

A simple code of long and short rings in which the code numbers indicate the number of rings on the line is contributed by H. L. M., Vt. This code is as follows:

2 · ·	11 — ·	21 — — ·	31 — — — ·	41 — — — — ·
3 · · ·	12 — · ·	22 — — · ·	32 — — — · ·	42 — — — — · ·
4 · · · ·	13 — · · ·	23 — — · · ·	33 — — — · · ·	43 — — — — · · ·
5 · · · · ·	14 — · · · ·	24 — — — · · · ·	34 — — — — · · · ·	
6 · · · · · ·				

Table 825-a.

This provides a code for a line having twenty telephones, which is as heavy a load as this company believes a line should have to carry. On the above code the long and short rings are indicated by the length of the dashes, as in other tables presented on this page. The code number follows that of a line, separated by a dash, in the directory—as 231-34 means line 231, ring 3 long and 4 short.

It is to be noted that this code exactly follows the requirements of the query. Some of the other codes do not fully answer these requirements. One code which has been received employs a twenty-eight party code which the operator must memorize. It is given in Table 825-*b*, contributed by L. C. H., New York. The three left hand columns give the code, while the right hand column is taken from the directory, showing how the list of names appears in connection with the numbers. The novelty of this code consists in the combination of letters and numbers. Possibly some other reader may have a few interesting things to say about such a practice. Subscribers who wish to know the code, in order that they may ring other parties on their own line, can readily obtain it, as it is conspicuously printed in the directory.

The last three codes on this page were all contributed by the manager of a New York company, with permission to publish

A · —	M — —	1 · — — ·	8-N	Baker, Ray
B — · · ·	N — ·	2 · · — ·	7-F	Bliss, N. W.
D — · ·	P · — — ·	3 · · · — ·	7-V	Brainard, E. O.
F · — ·	Q — — · —	4 · · · · —	4-H	Barnes, C. E.
G — — ·	S · · ·	5 · · · —	13-7	Bark
H · · · ·	U · · —	6 — · · · ·	13-3	Burt, W. D.
I · ·	V · · · —	7 — — · · ·	6-N	Baldwin, V. E.
J — · — ·	W · — —	8 — — · · ·	15-A	Baldwin, F. E.
K — · —	X — · · —	9 — — — ·	13-D	Bliss, Dr. T. C.
L —				

Emergency Call, 8 to 12 Short Rings.

Table 825-b.

over the signature H. L. J. In Table 825-*c* is shown a code for rings up to 30. Here the code has apparently been carefully worked out to give the least annoyance from ringing on the line, but requires an effort of memory on the part of the operator, and

1 ·	9 · — — —	17 — —	24 — · · ·
2 · ·	10 · · — —	18 — ·	25 — — · ·
3 · —	11 · · · —	19 — — — ·	26 — — — — ·
4 · · ·	12 · — · —	20 — — ·	27 — · — ·
5 · — —	13 · — — ·	21 — · ·	28 — · · —
6 · · —	14 · · — ·	22 — · — ·	29 — — · —
7 · — ·	15 · — · ·	23 — — — —	30 — · — —
8 · · · ·	16 —		

Table 825-c.

would have to be printed in the directory for the benefit of subscribers.

Table 825-*d* shows a simple code for a twenty party line in which a very slight burden is imposed in the way of ringing.

1 · ·	6 — — ·	11 · · · ·	16 — · — ·
2 · —	7 · · —	12 — · · ·	17 · — — ·
3 — ·	8 — · ·	13 · · — —	18 — · · —
4 · · ·	9 · — ·	14 — — · ·	19 · · — ·
5 · — —	10 — · —	15 · · · —	20 · — · ·

Table 825-d.

This important advantage should be appreciated by both operators and persons on the line who have to listen to distinguish between the rings in order to know when to answer.

The final table, No. 825-*e*, gives a code, worked out on something the same principle as Table 825-*a*, but providing for 46 parties. Apparently Mr. J. believes in "loading 'em up," as he closes

1 · ·	13 — · · ·	25 — — · · · · ·	36 — — — · · · · · ·
2 · ·	14 — · · · ·	26 — — · · · · · ·	41 — — — — ·
3 · · ·	15 — · · · · ·	31 — — — ·	42 — — — — · ·
4 · · · ·	16 — · · · · · ·	32 — — — · ·	43 — — — — · · ·
5 · · · · ·	21 — — ·	33 — — — · · ·	44 — — — — · · · ·
6 · · · · · ·	22 — — · ·	34 — — — · · · ·	45 — — — — · · · · ·
11 — ·	23 — — · · ·	35 — — — · · · · ·	46 — — — — · · · · · ·
12 — · ·	24 — — · · · ·		

Table 825-e.

with the remark: "When you get up to four long and six short rings, cut your line in two and get some new business on each division."

Telephone managers will have a good chance to thresh out this subject of code ringing in thorough fashion, if they will send in their contributions at once. Both new matter and criticisms of what is published are invited.

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IN THE OPERATING FIELD

BURGLARS USE TELEPHONE TO DETERMINE SAFE PROSPECT FOR THEFT.

TELEPHONES have frequently been used for the purpose of apprehending criminals, but seldom have they been used by burglars to discover whether the object of their attempts was unguarded. That is just what happened, however, in a little suburb of Toledo a few nights ago, when the residence of Pastor Huddle of the Evangelic Church was looted and everything of value in the parsonage taken with the exception of the morning's collection.

An investigation of the affair afterward brought out the fact that nearly every person in the village had been rung up by telephone on that night. If a call was answered the reply was simply the slamming of the receiver. All the houses which failed to reply to the calls were marked and though only one was visited, evidence showed that an entrance into several had been attempted.

PROPOSED LEGISLATION IN PENNSYLVANIA.

AN act has been introduced into the House of Representatives of Pennsylvania by Mr. W. S. Reynolds providing that no telephone, telegraph or other public service corporation shall enter upon or occupy in any manner whatever, any street or highway within any city or borough of the commonwealth without first making application in writing to the proper authorities of such city or borough and obtaining their consent or permission, which shall be given by ordinance only and upon such conditions, stipulations, and regulations as the respective municipal authorities may deem necessary. The purpose of this proposed legislation seems to be to make a franchise necessary from the municipalities before a telephone company can commence building in any city or borough. It is a step backward from the liberal law of 1905, when by act 205 the former act of April 29, 1874, was modified and it was provided that telephone and telegraph companies might build their wires, cables, posts and subways along, under and upon the roads, streets and waters of the State, subject to reasonable regulation by the municipality, through which they passed, but not so as to incommode the public or interrupt navigation. This former legislation recognized the municipality's right to regulate the use of the streets under the police power, a right which would have existed without such provision. The present proposed legislation would make the consent of the municipality a condition precedent to commencing business and would give the municipality the right to refuse such consent if it desired. Such an act would hinder telephone construction in the State. The proposed act is not very different from act 132 of the laws of the session of 1885, which made application to the municipal authorities of the city, town or borough, and their subsequent permission, necessary before a company could erect poles and run wires in the streets. This act provided that permission could be given by ordinance only and the municipality might make such conditions and regulations as it saw fit. It would seem that this act of 1885 which amended an act of May 1, 1876, supplemental to an act of 1874, was modified by the more liberal legislation of 1905.

BEAVER COUNTY TELEPHONE COMPANY CARRIES ITS APPEAL FOR A FRANCHISE DIRECTLY TO THE PEOPLE IN ROCHESTER, PA.

FOR some time past the Beaver County Telephone Company has been meeting with determined opposition to its efforts to obtain a franchise in the city of Rochester, Pa., although it has been granted full rights in all of the rest of that section of the county. After realizing the source of the opposition to this company, General Manager S. C. Thayer came to the conclusion that the only way to secure an entrance to the city was to carry his case to the people directly. He has therefore prepared a circular entitled "The Battle of Progress," which sets forth his case. It is an exceptionally clear presentation not only of the advantages of Independent service, but of the disadvantages which people suffer under the present monopolistic arrangements. It has already produced an excellent effect, and it is believed that at the Spring election the people will pay special attention to this matter of a telephone franchise, and elect councilmen who are willing to obey their wishes.

COUNTY OFFICES IN BELMONT COUNTY, OHIO, TO BE SUPPLIED WITH INDEPENDENT SERVICE EXCLUSIVELY.

THE Bell telephones are to be removed from the county offices of Belmont county at Martin's Ferry, O., by order of the County Commissioners. This summary action is said to be due primarily to the fact that the service of the Bell company has for a long time been very poor. In the discussion which has arisen over the matter, there have been brought to light some very interesting facts in regard to the rates charged by the Bell company throughout the town. It is said that for the same classes of service various rates were in effect; the highest was the published rate, and from this the cost of service was graded down according to the bargaining ability of the individual using it. A canvas is reported to have brought out the fact that a large proportion of the Bell subscribers are getting service at reduced rates, while some of them are paying nothing at all. Business men who have been paying the high rates are planning to take an action similar to that of the county commissioners.

TOLL LINE CONSTRUCTION TO BE CARRIED ON RAPIDLY IN NORTH DAKOTA.

PLANS have already been made by the North Dakota Independent Telephone Company for the erection of more than one hundred miles of new toll lines. These extensions of the present system will be made in the vicinity of Hope, Valley City and Jamestown, and they were decided upon at a recent meeting of the board of directors held at Minneapolis. The trunk line which the company is now building from Fargo to Glendive, Montana, has been nearly completed, and will probably be in operation very soon. In addition to this toll line work the company is to reconstruct the exchanges at Bismarck, Valley City and Casselton, the installation of new switchboards being included in the plans for the two latter plants. At the directors' meeting the officers of the company were reelected as follows: President, H. R. Lyons, Mandan; vice president, J. D. Brown, Hope; second vice president, Robert Jones, Fargo; treasurer, E. J. Weiser, Fargo; secretary, A. B. Cox, valley City.

CUMBERLAND COMPANY DODGES ISSUE WITH MISSISSIPPI RAILROAD COMMISSION.

THE railroad commission of the State of Mississippi, which has jurisdiction over telephone and telegraph companies, is receiving complaints daily from various portions of that State against the Cumberland Telephone and Telegraph Co. (Bell), alleging that the company is not complying with the orders of the commission to grant cheaper rates and furnish free service between exchanges located in the same county.

Three months ago the Mississippi commission ordered the Cumberland company to give free service between exchanges located in the same county. The Cumberland company has done this in Tennessee since it was organized and Mississippi asked the same treatment. The company protested strongly against the order, but the commission would make no abatement and the Cumberland company agreed to comply. Four months have

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IN THE OPERATING FIELD

passed since the company agreed to supply this service and the citizens are complaining loudly. Through many counties in Mississippi the Cumberland company had but one line connecting the small towns where it operated exchanges, and had been charging regular long-distance fees for use of the line. Now, since such service is to be free, the increase in the amount of business transacted has been so great that these single lines will not handle the traffic.

Leland Hume, general manager of the company at Nashville, Tenn., has been asked by the commission to explain the delay in carrying out the commission's order, and has reported that the company has not been able to stretch the additional wire for want of labor and material. In a number of Mississippi counties the company has from three to six exchanges, the subscribers at any of them having the right to call parties on the other exchanges without additional cost, and Mr. Hume says that the free use of the single lines has so burdened them that additional lines are necessary, and they cannot be furnished on such short notice. The commission has filed its reply and copies have been sent to all the complaining subscribers. These subscribers now, however, are reporting to the commission again that the company has made no effort to comply with the order, and contend that the delay is made with the object of defeating the commission's purpose. They claim that the conditions are injurious to their business interests, and should be remedied without delay.

INDEPENDENT COMPANIES URGE APPLICATION FOR CHARTER IN CONNECTICUT.

COUNSEL for the Connecticut Home Telephone Company have prepared an application for a charter which has been presented in the Senate by Senator McGovern. This application asks for substantially the same privileges which are now enjoyed by the Southern New England Telephone Company. The capitalization is set at $500,000 initially, with the privilege of increasing to $5,000,000. Under the provisions of the charter the corporation may construct, maintain and operate a telephone system and exchanges in towns of more than 15,000 inhabitants only after it has been fully established to the satisfaction of a superior court that it has bona fide contracts from residents or business men equal to one-tenth of the number of tax payers. When the company proves these facts, the judge is authorized to make a finding that public convenience and necessity require the construction of a system. Such a process is not necessary in towns of under 15,000 inhabitants under the terms of the proposed charter.

ATTEMPT OF OFFICIALS TO OUST BELL COMPANY FROM A TENNESSEE COUNTY.

THE Shelby County Court, at Memphis, Tenn., has instructed the county attorney to "investigate the charter of the Cumberland Telephone and Telegraph Company, and if found to be defective, as the court believes it to be, to have all poles of the company in that county removed." The Cumberland company is operating in Memphis on a State charter under the old State act of 1875 and has no franchise from or contract with the county of Shelby or city of Memphis. The county attorney is now conducting the investigation.

CARTHAGE, MO., RECEIVING SERVICE FROM INDEPENDENT COMPANY WHICH HAS DEVELOPED RAPIDLY.

THE benefit to the city of Carthage, Mo., which has come through the introduction of Independent telephone service is indicated by the growth of the company which furnishes it. Four years ago the Home Telephone Company had 537 subscribers in the city of Carthage, with about 1,600 telephones on its system connected to lines outside of the town. At the present time the Carthage exchange has 1,400 subscribers, and to the lines of the other exchanges are connected more than 6,000 telephones. The importance of making it easy for farmers living over a wide range of territory to obtain quick connections with business houses in the city led to running out a great many rural lines directly from the Carthage exchange. On these lines there are now said to be over 500 instruments, giving a service which is very much appreciated both by the town and country subscribers. Rapid as has been the growth in the past, building of many new lines is expected to be necessary this year.

County.	Independently Owned and Operated. Telephones.	Bell, Including Sub-Licensees. Telephones.
Adams	1,460	5
Allen	7,200	600
Bartholomew	2,284	140
Benton	1,300	***
Blackford	850	505
Boone	3,500	815
Brown	650	50
Carroll	2,500	...
Cass	4,000	...
Clark	650	400
Clay	2,725	800
Clinton	1,943	1,441
Crawford	544	***
Daviess	1,234	425
Dearborn	725	***
Decatur	1,455	250
Dekalb	1,700	2,300
Delaware	3,475	3,300
Dubois	1,400	500
Elkhart	5,600	700
Fayette	1,384	98
Floyd	2,100	900
Fountain	2,796	310
Franklin	500	...
Fulton	2,010	...
Gibson	2,225	815
Grant	1,250	3,350
Greene	565	1,560
Hamilton	2,280	...
Hancock	1,300	***
Harrison	1,580	300
Hendricks	2,715	60
Henry	2,800	850
Howard	2,552	...
Huntington	605	850
Jackson	1,850	...
Jasper	1,400	***
Jay	2,600	210
Jefferson	300	1,200
Jennings	963	...
Johnson	2,600	700
Knox	2,600	850
Kosciusko	3,100	***
Lagrange	1,500	210
Lake	400	2,600
Laporte	1,900	750
Lawrence	2,000	475
Madison	4,557	2,677
Marion	11,687	8,234
Marshall	1,500	130
Martin	350	***
Miami	3,120	800
Monroe	2,450	30
Montgomery	2,500	2,600
Morgan	2,241	111
Newton	370	***
Noble	2,000	250
Ohio	250	401
Orange	350	150
Owen	1,200	475
Parke	2,252	***
Perry	514	175
Pike	950	550
Porter	700	800
Posey	1,500	500
Pulaski	1,245	***
Putnam	3,545	...
Randolph	4,120	250
Ripley	600	95
Rush	2,375	50
Scott	470	...
Shelby	560	1,006
Spencer	1,250	1,300
Starke	600	1
Steuben	1,600	800
St. Joseph	5,000	1,200
Sullivan	3,825	1,150
Switzerland	475	***
Tippecanoe	5,080	800
Tipton	2,100	...
Union	910	7
Vanderburgh	250	3,500
Vermillion	1,894	1,800
Vigo	3,029	2,290
Wabash	3,100	40
Warren	1,750	***
Warrick	275	175
Washington	600	400
Wayne	5,150	508
Wells	800	800
White	1,170	1,855
Whitley	2,892	...
Totals	186,226	64,229

*** No report.

Statistical Report or Comparative Standing of Bell and Independent Companies of Indiana, Dec. 1, 1906; Compiled by Chas. S. Norton, Secretary of the Indiana Independent Telephone Association.

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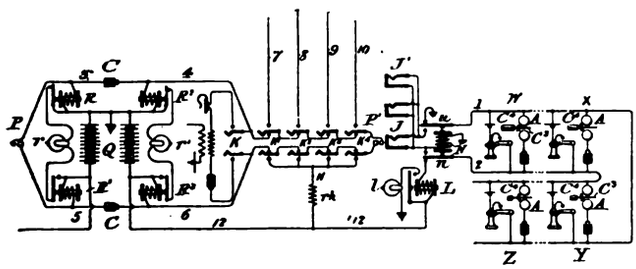
TELEPHONE PATENTS

PARTY LINE TELEPHONE SYSTEM.

W. W. Dean, Elyria, O., patents (No. 842,772; dated January 29, 1907; filed April 17, 1905; serial No. 255,961) and assigns to the Dean Electric Company, Elyria, O., a party line telephone system.

This patent covers an arrangement for the well-known Dean harmonic signaling system. In the figure shown each of the keys K^1, K^2, K^3, K^4 is connected to a generator giving a particular frequency. Subscribers' stations *W, X, Y, Z* are provided with bells tuned to respond to these different frequencies. This tuning is effected by an adjustment of the clapper upon its rod, and the characteristics of the spring upon which the rod is mounted.



A current of proper frequency causes an initial movement of the armature of the corresponding bell, which is greatly increased until a ring is effected. In connection with the generating machinery a suitable governor is provided, to regulate the speed and give the desired frequencies. This patent and others upon this system, which have recently been granted, contain exceptionally interesting discussions of applications of the harmonic signaling principle.

CABLE HOLDING CLIP.

Augustus Andrews, Gulfport, Miss., and Lawrence M. Galliher, New Orleans, La., patent (No. 841,914, dated January 22, 1907; filed November 3, 1906; serial No. 341,954), a cable holding clip.

This clamp consists of a single piece of metal bent in reverse directions to form two hollow cylindrical portions adapted to clamp the cable and messenger wire respectively. When in place the device is locked firmly to the cable and to the supporting strand by folding over suitable shaped projecting members.

TELEPHONE SYSTEM.

R. M. Eaton, Philadelphia, Pa., patents (No. 843,078; dated February 5, 1907; filed March 30, 1904; serial No. 200,705) and assigns to the Keystone Telephone Company, Philadelphia, Pa., a telephone system.

The object of this invention is to provide a means for enabling an operator at an exchange using divided switchboards to secure connection with an idle line to the exclusion of all other operators. This is accomplished by closing a key associated with the line which puts her telephone set in connection with the line, but cuts out the wires leading to operators' talking circuits at each of the other stations.

TELEPHONE SWITCH.

Klas Weman, Buffalo, N. Y., patents (No. 843,053; dated February 5, 1907; filed July 13, 1906; serial No. 325,997) a telephone switch.

This invention covers a self-contained switch adapted to be inserted in the handle of a telephone of the hand-micro type. The necessary switch springs are mounted in a small channel, which may be inserted in a slot in a suitably constructed handle, and fastened in place by screws. The actuation of the springs is accomplished by an outer lever of insulating material, which is mounted on a spring in such a way as to leave the circuits open when in its normal position, and to be moved inward into line with the circumference of the handle for the necessary changes in the contacts when the handle is firmly grasped. Certain connections from the interior of the handle may be made by flexible cords before the switch is in place, the remainder being made through the screws which hold it in position.

AUTOMATIC TELEPHONE KEY.

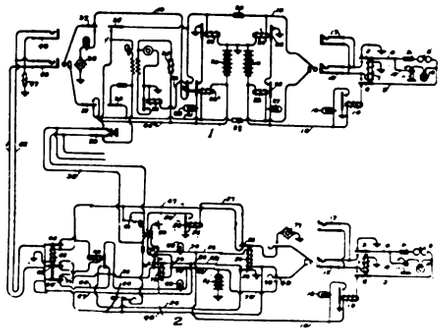
Ernest A. Faller and Oscar Alvin Danielson, New York, N. Y., patents (No. 824,291; dated June 26, 1906; filed October 6, 1904; serial No. 227,437) an automatic telephone key.

In telephone systems of the semi-automatic type covered by previous patents of this inventor it is necessary for the operator to actuate a key to cause the illumination of a trunk-indicating lamp after she has plugged in to the switchboard division indicated by the signals. To obviate the necessity of actuating this key and thus to further simplify the duties of the operator, the inventor provides that the key shall be actuated by an arm which is so arranged beneath the cord shelf as to form a socket for the plug and is intended to be released on the removal of the plug. For restoring the key to its normal position, which should be accomplished before the plug is returned to its socket, an electromagnet, with suitable circuit connections, is provided.

INCOMING TRUNK LINE.

Howard M. Post, Chicago, Ill., patents (No. 841,339; dated January 15, 1907; filed March 14, 1906; serial No. 305,993) and assigns to the Kellogg Switchboard and Supply Company, Chicago, Ill., an incoming trunk line.

When the A operator plugs in a circuit including battery is closed through supervisory relays at the A position and high resistance trunk relay 46. Owing to this high resistance the supervisory relays are not operated, but relay 46 is energized, closing circuit of the guard lamp 62, the illumination of which notifies the B operator that the A operator has inserted her



plug. The B operator tests the desired line, and if it is busy is notified by a click, caused by the operation of test relay 56.

The insertion of her calling plug causes battery to flow through winding of relay 50, which cuts off the test relay, and connects the tip strand through for conversation. The operation of this relay disconnects the guard lamp 62, and illuminates ringing

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lamp 69 through the contacts made by armature 53. Current flows through cut-off relay 7 from battery 51 to disconnect the line relay. During the process of ringing cut-off relay 7 is actuated from battery 51 through conductor 79 and contacts 78 of ringing key.

When the called subscriber responds relay 45 is operated by current from battery 51, passing over conductors 63, 80, 52, winding of relay 50, sub-station set and back through the other side of the line to relay 45. The operation of relay 45 cuts off the high resistance relay 46 and extends the circuit of battery 29 at the A exchange to the instrument of the subscriber connected at the B board. The line of the called subscriber is thus substituted for the path of current from battery 29 through high resistance trunk relay 46. The supervisory relays at the A position may be controlled through this circuit, while battery 29 furnishes energy to the transmitter of the called subscriber over a circuit free from inductive devices of any sort.

The operation of relay 45 opens the circuit of guard lamp 62 at back contact 66, and closes the circuit of relay 72 at its front contact 74. This lamp is therefore prevented from lighting when circuit is closed at back contact of trunk relay 46. Ringing lamp 6 9is extinguished by the operation of relay 72 through the breaking of back contact 71. A locking circuit for relay 72 is completed through armature 53 of relay 50. When the B operator hangs up, relay 45 allows its armatures to drop back, inserting high resistance trunk relay in the path of current from battery 29, and causing the illumination of the supervisory lamp at the A position. When the A operator removes plug from the trunk jack relay 46 will be energized, closing circuit of disconnect lamp 62 at its back contact. The illumination of lamp 62 is a signal for the B operator to pull down the connection.

AUTOMATIC RINGING DEVICE.

William W. Dean, Elyria, O., patents (No. 838,244; dated, Dec. 11, 1906; filed Jan. 16, 1906; serial No. 296,287 and assigns to the Dean Electric Co., Elyria, O.) an automatic ringing device.

This patent covers an arrangement for the application of ringing current through a suitable switch, and its maintenance in connection with the line until the subscriber answers. The method by which this is accomplished is designed to permit of the use of selective ringing current of different frequencies.

In the accompanying figure is shown a ringing key K, the action of which in connecting ringing current to the line will be evident. If the operator wishes to call the subscriber at T, she depresses cam k, which is locked in position by the action of detent-lever k^4 upon lever k^7. The necessary movement of detent k^3 is effected in opposition to the tension of spring k^{11},

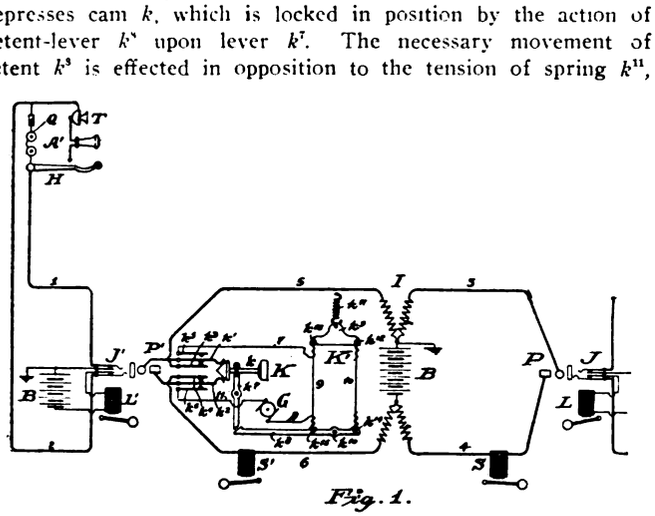


Fig. 1.

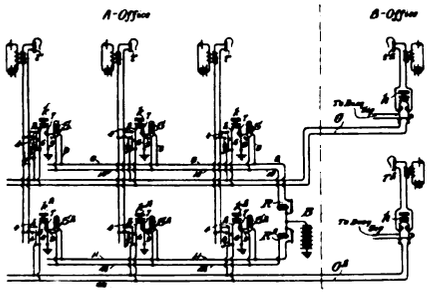
which thereafter holds k^8 in place. A commutator, preferably inserted in the ringing circuit, makes and breaks the generator current, giving intermittent ringing until the removal of the subscriber's telephone. The control of the cam is effected by a special mechanism of the exchange as follows: Wires 9 and 10 are stretched between pins on a strain plate, normally holding apparatus in the position shown in the figure. This balance condition persists until wire 10 is elongated by the heating effect of a suitable current. Resistance of the line is sufficient to prevent a passage of any large quantity of current from the ringing generator over the wire 9, which forms a part of the generator circuit, during ringing. Wire 10 is completely insulated. This pair of wire frames, which is known as a thermic controller, is in connection with the supporting device.

As soon as the receiver at T is removed from the hook, the resistance through the line and substation set is lowered, current rises in wire 9 until it becomes very much warmer, and the consequent expansion of this wire destroys the balance between it and wire 10, causing lever k^9 to be tilted, until it releases lever k^7 on account of the tension of the spring k^{11}. As soon as the key is released, wire 9 cools off and the apparatus is again ready for action.

BUSY SIGNALS FOR ORDER WIRES.

Henry Linton Reber, St. Louis, Mo., patents (No. 838,749; dated December 18, 1906; filed March 29, 1905; serial No. 252,655) a telephone system.

This patent covers an arrangement of busy signals in con-



nection with order wire circuits extending between local and trunk positions. Its purpose is to make it possible for the subscriber's operator to avoid delay by always being able to select an idle incoming trunk operator. In the accompanying diagram the subscribers' operators' positions are at the "A" office, and the trunk operators' positions at the "B" office. Order wires O and O^2 extend between the two switchboards. A operators' telephones r, r may be connected with either order wire by keys k k^2. Each of these keys has an additional spring that is connected with ground, the normal contact being wired to the signal S, associated with relay R or R^2. The depression of any key associated with an order wire operates the corresponding relay by completing its circuit through springs 6 and 9, lighting the lamps associated with corresponding keys at all other A positions. These lamps therefore serve as busy signals. Key h at the B office is so connected that if for any reason a B operator is unable to attend to an incoming call she may connect the line with a source of rapidly varying current which will cause a distinctive hum to be heard in the receiver of the A operator.

RINGING AND LISTENING KEY.

William W. Dean, Chicago, Ill., patents (No. 836,067; dated November 13th, 1906; filed June 20th, 1902; serial No. 112,436) and assigns to the Kellogg Switchboard & Supply Company, Chicago, Ill., an operator's ringing and listening key.

In this patent are described methods of forming and assembling the parts of the key of the two-way ringing and listening type Among the novel features covered are the methods of providing for lost motion between the two members of the key lever, the construction of a stop to limit the extent of the vibration of the lower member of the key lever, the method of fastening springs in position, and a form of construction by which the friction between the springs and movable member is reduced. This is accomplished by off-setting the rubbing surfaces of the two springs, preferably by cutting away the ends on opposite edges, so as to leave only the off-set narrow portions in contact with the rubbing surface on the key lever. This rubbing surface is furnished by two small rolls of insulating material, which are so mounted that they may freely revolve in opposite directions. The framework of this key is so constructed that all working parts may be fastened to it from the side.

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WANTED—A telephone manufacturing engineer and manager, to take charge and promote a small concern. A thoroughly capable man is required. Address, Box 777, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 777

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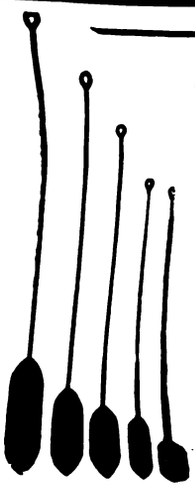

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Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
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IN THE MANUFACTURING FIELD

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THE STROMBERG-CARLSON MAP DISPLAY AT THE CHICAGO ELECTRICAL SHOW.

AT the Chicago Electrical Show one of the features which attracted a great deal of attention and excited much favorable comment was a large illuminated map, shown by the Stromberg-Carlson Telephone Manufacturing Company, of Rochester, N. Y., and Chicago, Ill. This map, as is made evident by the illustration presented upon this page, represented the entire United States, being drawn to a scale which made it nearly fill a large board 9 feet 6 inches by 15 feet in height and breadth respectively.

Every city in which is installed a Stromberg-Carlson telephone exchange was represented by a lamp. Three sizes of lamps and three different colors were used; the large white lamps, 21 in number, representing the home and branch offices of the company; the smaller white lamps, of which 1,775 were used, represented the generator call exchanges; large red lamps represented the large multiple or city exchanges, and the smaller red ones represented central energy systems of smaller capacity. No less than 317 red lamps were in place. All these lights remained illuminated throughout the exposition, making a display which was a very interesting and attractive sight. It formed an exceedingly strong object lesson of the growth and importance of the Independent companies. Among the many other interesting features of this company's exhibit was a 10,800-line section of a common battery switchboard, and other apparatus which gave a comprehensive idea of the various classes of equipment manufactured by the company.

Exhibit of the Stromberg-Carlson Telephone Manufacturing Company at the Chicago Electrical Exposition, Showing Large Illuminated Map.

THE CENTRAL TELEPHONE & ELECTRIC CO. of St. Louis, Mo., and Dallas, Texas, has just shipped two carloads of construction material to be used by the Municipal Telephone Plant, Edmonton, Alberta Province, Canada; also two 100 drop switchboards and complete equipment for exchanges in Mexico. Shipment of 35 cable terminals to Brazil on one order, and four other orders for Brazilian points for Becker cable terminals and other special protective devices show the foreign demand for these products. The company has one order for over fifty terminal heads to be shipped to an operating exchange in Texas, and reports that its protector department, as well as other departments, are all working over time to keep up with the orders.

THE BLAKE SIGNAL & MFG. COMPANY, 246 Summer Street, Boston, Mass., is receiving orders for its insulated staples and compressed cleats in constantly increasing numbers from telephone companies. The advantages of these supports for wiring seem to have been thoroughly demonstrated. The insulated staples provide an especially satisfactory means of securing wires to woodwork, as the insulation affords a protection to the wire which prevents interruptions due to grounds and short circuits. The broad contact surface between the insulating covering and the wire prevents the breaking of the conductor, as is likely to occur with staples of the ordinary type when carelessly driven. The compressed cleats are best suited to conditions which obtain when wiring is run over plaster. As these cleats obtain an especially firm grip upon the wire they lead to economies in the actual work of running connections, as they can be easily set up at considerable distance apart, and will hold the wire firmly without any slack. The intermediate cleats can then be quickly placed. They are so strongly made that they do not readily break under the pressure of the screw, as do ordinary porcelain cleats. The company will send full information upon receipt of a request.

FRANK B. COOK, 246 West Lake street, Chicago, Ill., calls attention to the fact that when the Cook self-welding wire joint is used in making connections between sections of line wire there is no danger of corrosion, as moisture cannot penetrate to the wire. This joint is so formed that the act of twisting draws the sleeve into the recess between the wires, and stretches it absolutely tight around both wires, making a firm joint with good electrical contact over the entire circumference. He has issued a circular showing several views of this joint as applied, which make these points evident, and will be pleased to send this information to interested parties.

THE MOUNTAIN STATE ELECTRICAL COMPANY, Wheeling, West Va., in its booklet AL-2 describes the Poole lock-out system, which is becoming very extensively used on four-party lines. This instrument operates on a very simple principle, and affords an effective means of preventing subscribers from breaking in upon a busy line. The doing away with the listening in troubles which make it possible to secure secrecy and avoid such faults as failure to ring the right person owing to the removal of another telephone on the line, is an important advantage in giving party line service. The company makes several interesting statements in regard to this class of service, including estimates of cost which will be sent to interested persons upon receipt of a request.

THE D. & T. ANCHOR COMPANY, La Crosse, Wis., calls attention to the fact that the D. & T. anchors can be driven without difficulty in frozen ground. This fact has been practically demonstrated, so that telephone companies who wish to brace their lines in winter would appear to have an economical means of carrying on this work at their disposal. The company has prepared some interesting information upon various types of anchors, explaining the construction which gives them good holding power owing to the fact that they grip the solid ground.

THE NORTON-SYSTEM TELEPHONE COMPANY, Toronto, Canada, has just published in its Bulletin No. 5 a description of some of the interior systems which it recommends. This bulletin shows

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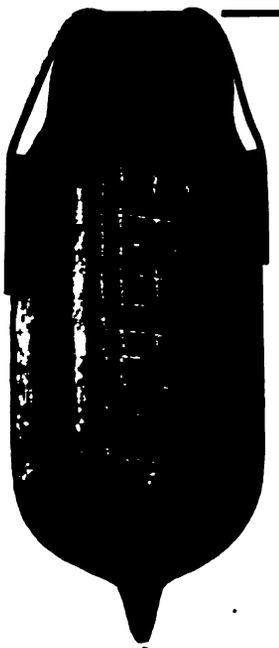


¶ On March 28th, 1906, the Primary Examiner, Division 16, United States Patent Office, in handing down a decision validating the V-B IRON WIRE BALLAST APPLICATIONS, announced:

"The ballast makes it possible to insert into each line a small device in no manner made especially for that line, but which automatically accommodates itself to that line, and which can be taken out and used on any other line of different resistance and will automatically balance this other line.

There is no selection of a certain device for a certain line necessary.

There is no rough approximation, but it is as though each line had been carefully tested and individually ballasted. More than this, the device **automatically** provides against a sudden short circuit on the line. With so many apparent advantages resulting from the adoption of the **BALLAST**, it would seem reasonable that telephone engineers would have availed themselves of the device. They seem rather to have adopted **more expensive, more complicated and less effective** means to reach the same end."

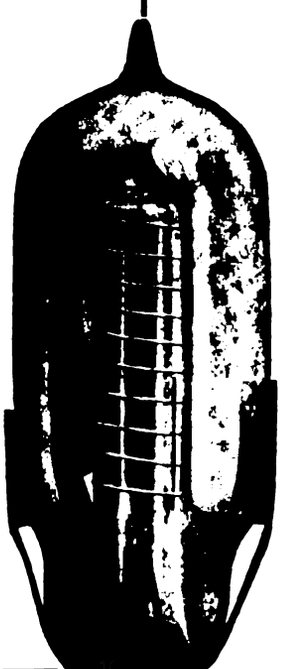
¶ On October 6, 1906, the Primary Examiner made the following important decision:

"All these patents (quoted in decision) serve but to show that this trouble (burning out of line lamps) has been long recognized and many attempts in many ways have been made to overcome it; that notwithstanding for a quarter of a century it was known that fine iron wire increased its resistance with a rise of current, **no one ever did it before.**

"It has not been denied but that the device is simple and a material improvement in telephone systems. The arrangement is new, accomplishes a useful result in a new way, and **advances the telephone system a step nearer its ultimate perfection.**"

¶ The services of the engineering department of THE VOTE-BERGER COMPANY, LA CROSSE, WISCONSIN, sole owners of the V-B iron wire ballast applications, are at your command. A line from you addressed to Department C will bring you full information concerning the various applications of the iron wire ballasts.

¶ If you contemplate purchasing a COMMON BATTERY switchboard this season, do not delay sending in your plans or specifications. If agreeable to you, sales engineers of THE VOTE-BERGER COMPANY will call upon you at your convenience. The sales engineers will not take up your time unless you are desirous of meeting them.



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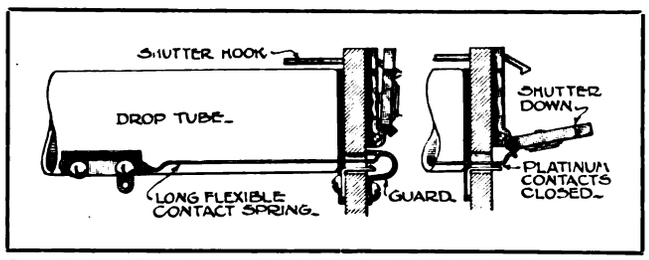
the circuits for such systems and also apparatus, including telephones, switches, annunciators, etc., which are needed in constructing them. The company will be pleased to send this bulletin or any information concerning the several classes of telephone apparatus in which it deals to all interested persons.

SOME DETAILS OF DEAN EXPRESS APPARATUS.

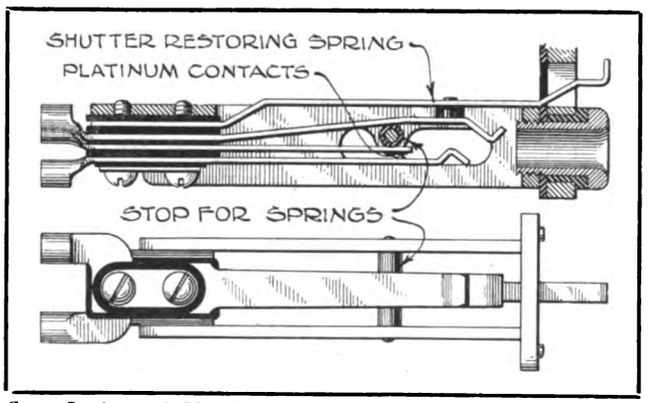
IT IS by attention to details that the manufacturers of telephone apparatus are eliminating the difficulties which formerly led to some of the most annoying troubles which vexed the operating men.

In a booklet devoted to a description of its new express type switchboards, the Dean Electric Co., of Elyria, Ohio, calls attention to two interesting points in the construction of its apparatus which are illustrated by the accompanying cuts. The one in the upper portion of this page shows the mechanism of the night alarm contact associated with the drop. It consists of a long flexible German silver spring mounted on the side of the drop tube with its free end projecting in front of the mounting strip as shown. This spring is so constructed and tempered as to have unusual flexibility so that when forced downward by the action of the shutter, as shown at the right hand side of the sketch, a positive contact may be assured. At the same time the resiliency of the spring is sufficient to carry it back into the normal position as soon as the shutter is restored and to insure its remaining in position without the necessity of frequent adjustment. Both of the night alarm contact points are of platinum and are located in plain view on the front of the switchboard. A guard is mounted in such a way as to protect them from mechanical injury.



Drop Used in Dean Express Board, Showing Visible Night Alarm Contacts.

The jack which is shown at the bottom of the page is made with a rigid steel frame and has heavy German silver springs. Normally the spring associated with the drop is connected with the line springs through platinum contacts. The springs when in normal position rest upon an insulated stop. The object of this device is to make it possible to maintain a heavy initial tension in the springs and at the same time keep them in absolute alignment with the plug hole in the jack. The shutter restoring spring is entirely insulated from the remainder of the mechanism. It is not controlled directly by the plug, but by the operation of the sleeve spring in the jack, to which it is attached by an insulating bushing. The end of this restoring spring is protected by the same guard which serves as a protection for the night alarm contacts. The jack is fastened to the mounting strip by its threaded sleeve. This construction allows it to be readily removed and replaced with the aid of a friction wrench.



Cross Section and Plan Drawings of a Jack, Showing Insulated Stop Upon Which Springs Rest When in Normal Position.

THE STERLING ELECTRIC COMPANY, Lafayette, Ind., has prepared an interesting card entitled "Do you know how to use a telephone?" It is illustrated with two photographs showing respectively the right and wrong ways. Of course the instrument shown is the Sterling. Telephone managers may obtain copies by writing to the company.

THE OLIVER MANUFACTURING COMPANY, 424 Library street, Philadelphia, Pa., has introduced in its new "Flexiphone" a telephone holder, which represents an important improvement in the arrangement of the balancing mechanism. The telephone stand is held in a vertical position, and automatically balanced at all times, and yet so delicate is the arrangement that no appreciable effort is needed to move the telephone to any location within the range of the arm. Connections to the transmitter and receiver are made through the arm, so that there is no annoyance from the cord, as is found when the ordinary desk telephone is used. The company will send full descriptions if asked to do so.

THE LEEDS & NORTHRUP COMPANY, 4901 Stenton avenue, Philadelphia, Pa., is calling especial attention at the present time to its varied line of non-portable resistance boxes and resistance measuring apparatus. This line of material is especially well fitted for certain classes of practical telephone work. One large telephone company to which the company has sold this material has repeated its orders many times within the past two or three years, showing apparently that good satisfaction has been obtained. The company will send out general information concerning these resistance boxes, or advice as to the kind of apparatus especially suited to any particular requirements, upon receipt of a request from the manager of a telephone company.

THE CENTURY TELEPHONE CONSTRUCTION COMPANY, 332 Ellicott street, Buffalo, N. Y., has introduced an improvement in its well-known celluloid markers for Independent telephone transmitters. It will be recalled that these consist of a small fan-shaped piece of celluloid, with a circular opening at the smaller end, through which the transmitter mouthpiece may be inserted, holding it in place. Upon the wider portion of the card is printed the Independent shield, and the words "Use this 'phone for long distance." The object, of course, is to keep a constant reminder before the subscriber who has both Independent and Bell telephones. The recent improvement consists in outlining just below the shield a small space in which the celluloid is slightly roughened, so that the telephone number may be written in.

THE COMMERCIAL ELECTRIC SUPPLY COMPANY, Fifteenth street, St. Louis, Mo., issues for the benefit of those customers who have occasion to make estimates a quarterly net price list. This list covers line construction lumber, plain and galvanized hardware, and telephone wires and cables. Prices are up to date at the time of issue. Managers and superintendents of construction can have their names put on the mailing list on application.

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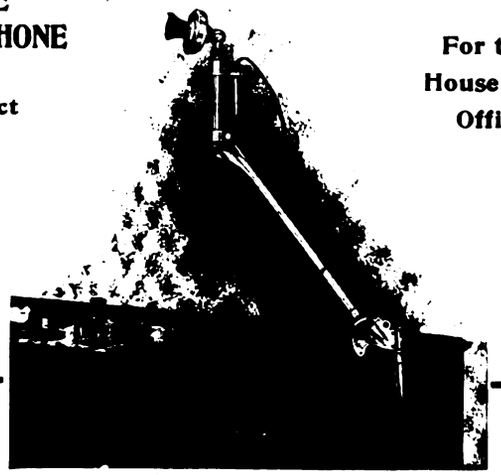
THE FLEXIPHONE

A Perfect Telephone

For the House and Office



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Where You Want It—When You Want It—And Never In The Way

Cuts Maintenance Cost in Half

MAKES DIVIDENDS GROW

Self-Balancing in any position—Cannot Fall—No Breakage—No Cord Troubles. The Switch mechanism is perfect. All joints soldered excepting Platinum contact points. Simplicity, Quality and Accessibility unequaled anywhere.

Leading makers of Standard instruments will supply the "Flexiphone" equipped with their own Transmitter and Receiver when desired.

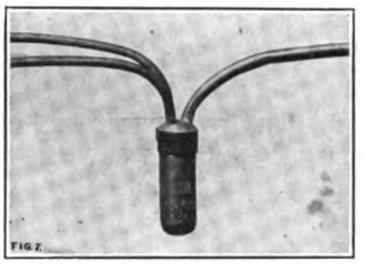
HOLTZER-CABOT ELECTRIC CO., Boston, Mass.
General Sales Agents for New York and New England.

OLIVER MANUFACTURING CO., Philadelphia, Pa.
General Sales Agents for the Atlantic, Gulf and Western States and Foreign Countries.

HOLTZER-CABOT ELECTRIC CO., Chicago, Ill.
General Sales Agents for the Middle West.

Send for illustrations of the finest Pedestal and Switch Mechanism ever made

A MONEY SAVER



A MONEY SAVER

YOUR MONEY

will earn more in direct proportion to the wisdom of your investment of it.

If you could splice your cables better and for less money, you would do it? It would be a wise move to adopt a device that would accomplish this result for you. A good investment.

If your regular lineman could make a better splice, absolutely watertight and airtight, you would like to let him do it? You would welcome the chance to buy a device that would enable you to get away from the heavy cost of horizontal splices.

When "shooting trouble" you would like to get away from the necessity of tearing open your horizontal splices that cost you so much money and will cost you nearly as much to repair?

HOW TO INCREASE IT

Let us send you descriptive matter of the Hargis Cable Splicing Joint shown above. Your regular lineman can make a better splice, quicker, at much less cost than an expert cable splicer can make a horizontal wiped joint. This will increase your money. By using the Hargis Cable Splicing Joint you save cable; you save labor; you save money; you can always get at your pairs without spoiling your splice when "shooting trouble."

It will pay you to write us for descriptive matter.

W. N. MATTHEWS & BRO.

Manufacturers of Patented Money Saving Specialties

242 North Second Street ST. LOUIS

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The WIRE and TELEPHONE COMPANY of AMERICA

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LONG DISTANCE HAND TELEPHONE

LOWEST MAINTENANCE COST

SOLID METAL FRAME ENCLOSED IN VULCANIZED HARD RUBBER

Only Nine Exposed Parts

No Exposed Connections

Practically Indestructible

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Write for Bulletin No. 101 giving full information

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THE WEEK'S MESSAGES

NEW COMPANIES.

HOBART, ARK.—The Big Elk Valley Telephone Company has been incorporated with a capital stock of $25,000.

LADOGA, IND.—Articles of incorporation have been filed by the Parkersburg Telephone Company. It has an authorized capital stock of $2,000 and the incorporators are D. S. Armstrong, J. I. Flanagan, Henry Fall, J. M. Nicholas, Arthur Nicholas, James Akers and others.

BLUFF CREEK, IA.—The Bluff Creek Telephone Company No. 9 has been organized with J. F. Hohl as president and I. R. Cox, secretary and treasurer. Connections will be made with Eddyville.

CARLYLE, KAN.—A rural telephone company, whose object it is to build lines to connect with the local exchange at Carlyle, has been organized by the farmers east of Carlyle. Among those interested in the proposition are W. F. Woods, J. B. Howell, H. Longshore, J. D. Christian, A. M. Dunlap, S. P. and J. E. Ryler. Construction of the line will be commenced at once.

McPHERSON, KAS.—The McPherson Rural Telephone Company has been organized with a capital stock of $5,000, and will include some sixteen rural lines. The officers are: C. W. Yowell, president; C. C. Mathes, vice president: T. M. Wallace, secretary; Jas. Poulson, treasurer.

HUSTONVILLE, KY.—Articles of incorporation have been filed by the Hustonville & Liberty Telephone Company. The capital stock is placed at $750, and the incorporators are Messrs. Humphrey and Young, of Liberty.

MONROE, ME.—The Monroe & Brooks Telephone Company, with a capital stock of $10,000, has been incorporated and the following officers elected: President, N. E. Webber; treasurer, H. Tibbetts, Monroe.

ST. CLOUD, MINN.—A farmers' telephone company, whose intention it is to build a line in the direction of Duelm, has been organized by the farmers east of St. Cloud. Among those interested in the enterprise are George Reis, John Curry, S. Brommenschenkle, H. Stirkamp, Bert Sawyer, Frank Bemar and Wm. Goedke.

REEDS, MO.—A new Independent telephone company, to be known as the Reeds Telephone Company, has been organized at Reeds, Mo. It will be operated along the lines of a mutual company and connections will be made with the Home Company of Carthage. The following officers were elected: President, H. R. Shue; secretary, C. B. Hood; treasurer, Harry Palmer.

MINEOLA, NEB.—Articles of incorporation have been filed by the Mineola Telephone Company. The capital stock is placed at $5,000, and the incorporators are Frank Oberle, I. D. Henry, Geo. Tomlinson, C. W. Morgan, W. F. Newman and others.

SMARTVILLE, NEB.—The Johnson Telephone Company, of Smartville, has been incorporated with a capital stock of $3,500. Among the incorporators may be mentioned George Sandusky, Frank Sack, Thos. Lempka, William Johns, Kirk Rose, Henry Hintz, Hy. Schumann, Jas. Murphy and David Bowen.

CALDWELL, O.—The Fulda Telephone Company, of Fulda, P. O. address Caldwell, O., has been incorporated with a capital stock of $750. J. M. Hehman and others are among the incorporators.

COLUMBUS GROVE, O.—The Columbus Grove Mutual Telephone Company has been organized by R. B. Good, W. H. Eversole, I. E. Bogart, J. T. Stoner and Jesse Amstotz.

FARGO, OKLA.—Articles of incorporation have been filed by the Fargo-Harmon Telephone Company, of Fargo. It has an authorized capital stock of $1,500, and the incorporators are G. W. Bailey, C. A. Stromberg, of Fargo, and others.

MIDDLETON, OKLA.—Articles of incorporation have been filed by the Middleton Grain Line Telephone Company. It has an authorized capital stock of $300, and the incorporators are B. F. McCutcheon, of Middleton, A. T. Cole and David Sherbon, of Peckham.

MUTUAL, OKLA.—The Farmers' & Merchants' Telephone Company, of Mutual, has been incorporated with a capital stock of $4,988. Among the incorporators are A. Huffman and Louis Morgan, of Mutual; G. C. Harper, of Moscow; Jacob Feathergill, of Persimmon.

JACKSON, TENN.—An Independent telephone company is to be formed at Jackson, Tenn., whose intention it is to construct a $225,000 exchange. A franchise has been granted to N. D. Smith, of Jackson, and the company is to be owned and controlled by local capitalists. It is proposed to install a thoroughly modern system, the company owning its own buildings. Wires in the business section are to be placed in conduits.

UVALDE, TEXAS.—The Uvalde & San Antonio Telephone Company has been incorporated with a capital stock of $10,000.

SALT LAKE CITY, UTAH.—The Utah, Nevada and Idaho Telephone Company has been incorporated with a capital stock of $200,000.

ONTARIO, VA.—Articles of incorporation have been filed by the Ontario Telephone Company. It has a capital stock of $5,000 and the incorporators are W. E. Bailey, Keysville, Va.; C. A. Osborne, R. H. Wilson, H. C. Henry and others.

ROSENDALE, WIS.—Articles of incorporation have been filed by the Rosendale Telephone Company. The capital stock is placed at $5,000, and F. I. Pinch, R. V. Pinch and I. W. Pinch are among the incorporators.

FORT SASKATCHEWAN, ALB., CAN.—The town council has decided to at once install a central energy telephone system which will be conducted under municipal ownership. Connection with the long distance lines now being built by the government will be made at Lloydminster. Address Mayor Daniels.

FRANCHISES.

CRESTED BUTTE, COL.—Application for a franchise to construct and operate a telephone system at Crested Butte has been made by the Crested Butte Telephone Company.

AVISTON, ILL.—The People's Telephone Company has been granted a franchise at Aviston. It is the company's intention to construct lines from this point to Trenton, where connection will be made with the Kinloch Long Distance Company for long distance service. The company has also been granted a franchise at Germantown, Ill., and work on its system will be commenced at once.

HELENA, MONT.—A request has been made by the Montana Independent Telephone Company of Butte, that the city council instruct the city engineer to designate certain streets and alleys in which it may install a telephone system.

AUBURN, NEB.—The city council of Auburn has granted a twenty-five-year franchise to the Auburn Mutual Telephone Company.

SCIO, ORE.—A franchise to construct a telephone system from Scio to Stayton has been granted the Scio Stayton Mutual Telephone Company.

STERLING, PA.—The Smartville Telephone Company has applied for a telephone franchise at Sterling.

MANTI, UTAH.—A franchise has been granted to the Southern Utah Telephone Company to construct lines and establish an exchange at Manti, Utah. Lines are to be built throughout the county, and connection made with the Independent line at Payson.

PAYSON, UTAH.—A franchise to construct and maintain telephone lines along the county line from Payson to the county line between Utah and Joab county has been granted to C. A. Watson and C. C. Adams, trustees for the Southern Utah Independent Telephone Company, hereafter to be incorporated.

FINANCIAL.

MIDDLETON, IDAHO.—At a recent meeting of the Star Independent Telephone Company the capital stock was increased from $10,000 to $25,000. It was also decided to install a new switchboard and otherwise improve its system.

ATWOOD, ILL.—The capital stock of the Atwood Mutual Telephone Company has been increased from $9,000 to $12,000.

CARMI, ILL.—It is the intention of the White County Telephone Company to increase its capital stock from $9,000 to $25,000 for the purpose of improving its system.

CARTHAGE, ILL.—The Mississippi Valley Telephone Company, Carthage, has increased its capital stock from $50,000 to $100,000.

WINCHESTER, IND.—It is the intention of the Farmland Telephone Company to increase its capital stock from $3,950 to $12,000, and also to pay in the future an annual dividend of 8 per cent.

BENZONIA, MICH.—A six per cent. telephone dividend has been declared by the Benzie County Telephone Company.

GRAND LEDGE, MICH.—The Grand Ledge Telephone Company has declared a three per cent. semi-annual dividend. The company guarantees a six per cent. dividend this year, and an eight per cent. dividend next year.

HOMER, MINN.—A cash dividend of 6 per cent has been declared by the Homer Telephone Company.

NEW RICHLAND, MINN.—Five thousand dollars have been added to the capital stock of the New Richland Telephone Company.

HIGHLAND MILLS, N. Y.—The Highland Mills Telephone Company, which now has a capital stock of $40,000, equally divided between preferred and common stock, expects to increase its common stock to $55,000.

GERMANTOWN, O.—The Germantown Independent Telephone Company has increased its capital stock from $10,000 to $20,000.

WOODSFIELD, O.—The Woodsfield Telephone Company has increased its capital stock from $50,000 to $60,000.

LOYALSOCK, PA.—The Loyalsock Telephone Company has declared the regular dividend of 6 per cent. on all stock issued prior to January 3, 1906, and 3 per cent. on stock issued prior to July 30, 1906.

SHICKSHINNY, PA.—An annual dividend of 5 per cent. has been declared by the Farmers' Telephone & Supply Company.

BELMONT, W. VA.—The usual semi-annual three per cent. dividend, payable February 5, has been declared by the Belmont Telephone Company.

ARCADIA, WIS.—The Western Wisconsin Telephone Company has increased its capital stock from $65,000 to $75,000.

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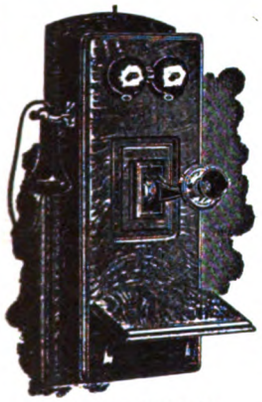
Our Price is Right

1st
TELEPHONE MADE
with all connecting wires, binding posts and terminal screws fully concealed
To Prevent Trouble
and with no exposed metal parts in the circuit to
Avoid Danger
from lightning while using the instrument. Send us your inquiry and we will "SHOW-U" at our expense an interesting proposition.
INTERNATIONAL TEL. MFG. CO.
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CEDAR POLES
We have a large stock of White Cedar Poles of all sizes, concentrated at a point on the D. & M. R. R. in lower Michigan, from which we can make prompt deliveries. The location of this stock offers exceptional facilities for shipments to all points in Ohio, Indiana, Southern Michigan and the Eastern States. Write us for delivered prices on any size for immediate shipment.
KELLOGG
SWITCHBOARD & SUPPLY CO.
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EVERY COIL
of Roebling Double Galvanized Telephone Wire bears a tin tag and lead seal upon which the word "Roebling" is stamped.
Don't accept Wire without the Roebling Seal.
JOHN A. ROEBLING'S SONS CO., - TRENTON, N. J.

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THE WEEK'S MESSAGES

OCONOMOWOC, WIS.—At the annual meeting of the Badger Telephone Company it was voted to increase the capital stock from $5,000 to $25,000.

SPARTA, WIS.—A six per cent. dividend has been paid by the Monroe County Telephone Company.

UNION GROVE, WIS.—The capital stock of the Union Grove Telephone Company has been increased from $5,000 to $15,000, and the increase in capital will be used to improve the company's plant.

WAUSAU, WIS.—The Marathon County Telephone Company has announced its intention of declaring a five per cent dividend after May 1.

MELITA, MAN., CAN.—The Melita-Arthur Telephone Company has declared a dividend of 30 per cent. for the past year. It is the intention of the company to build many new lines.

COMBINATIONS.

WARSAW, N. Y.—The Warsaw Home Telephone Company has acquired the plant of the Wyoming Telephone Company, which has exchanges at Wyoming, Dale and Linden.

ELECTIONS.

SULPHUR SPRINGS, IND.—The Sulphur Springs Co-operative Telephone Company has elected the following officers: President, Mark Modlin; secretary, Luther Shively; treasurer, Jas. Ball.

MARSHALLTOWN, IA.—The following officers have been elected by the West Main Street Mutual Telephone Company: J. W. Carson, president; L. Oehlsen, vice-president; H. H. Shumway, secretary and treasurer.

LEXINGTON, KY.—At a meeting of the stockholders of the Fayette Home Telephone Company held at Lexington recently the following officers were elected: Geo. S. Shanklin, president; J. T. Shelby, vice-president; Chas. Kerr, secretary; J. W. Porter, treasurer.

BLUE SPRINGS, NEB.—The Gage County Independent Telephone Company has elected A. R. Morris, president; A. R. Patton, secretary, A. H. Krauss, treasurer.

ATHENS, O.—The Athens County Home Telephone Company has elected W. E. Moler, president; G. W. Duffee, vice-president; A. F. Holmes, treasurer; W. E. Peters, secretary; C. L. Jones, general manager.

GUYSVILLE, O.—The following officers have been elected by the Guysville Telephone Company: I. Brewer, president; L. Finsterwald; vice-president; A. B. Saunders, secretary; John F. Starkey, treasurer.

ZANESVILLE, OHIO.—At a recent meeting of the stockholders of the Zanesville Telephone Company the following officers and directors were elected: C. Y. McVey, president; S. M. Granger, vice president; J. B. Rhodes, secretary and general manager; H. B. Taylor, treasurer. Directors: J. S. Brailey, Jr., J. B. Hoge, W. L. Cary, Jr., C. Y. McVey, A. S. Hillhouse, J. B. Rhodes, S. M. Granger, C. A. Potwin and H. A. Sharpe.

PERSONAL.

FRED BUTTERFIELD has been elected secretary of the Industry Mutual Telephone Company, of Industry, Ill.

A. P. HARRISON, heretofore chief electrician of the Cumberland Telephone Company at Nashville, Tenn., has been appointed chief supervisor of electrical equipment of the whole system. The employes of his department presented him with a handsome monogram signet ring and a silver-cased clothes brush when his appointment was announced.

MISCELLANEOUS.

ODEBOLT, IA.—The exchange of the Farmers' Telephone Company was destroyed during a recent fire at Odebolt.

ABBYVILLE, KAN.—The Abbyville Telephone Exchange has been purchased from Frank Birket by the Pekin Co-operative Telephone Company.

ALINE, OKLA.—The Oklahoma Central Telephone Company, whose lines run from Aline to Cleo, has passed into the hands of George Hamacher, A. B. Fluke and others. It is the intention of the new owners to build a number of new lines.

CARMEN, OKLA.—A permanent county organization of all the rural telephone companies in Wood county is being considered. Among the companies which will enter into the organization are the Union Telephone Company, of Ingersol; Byron Telephone Company, of Byron; Driftwood Telephone Company, Capron; Cherokee Telephone Company, Cherokee, and the Carmen Rural Telephone Company.

CAMERON, W. VA.—Connections are to be made by the Cameron Telephone Company with the National Telephone Company at Wheeling.

NORFOLK, VA.—Among the recommendations that have been made to the Finance Committee of the Norfolk City Council is an appropriation of $12,000 for a new police telephone and signal system.

VIRDEN, MAN., CAN.—The municipality of Wallace has applied to the provincial government for estimates of cost of the construction of a municipal owned telephone system. Address A. C. MacDougall, Virden, Man.

New Construction in the Field

MONROE, ARK.—A new telephone line from Monroe to Brinkley is being constructed by J. W. Carter, of Monroe, and Thomas Monroe, of Brinkley.

RECTOR, ARK.—The lines of the Local Telephone Company are being extended all over the eastern district of Clay county, and it is the company's intention to build lines to Nimmons and to Kennett, Mo., and over the greater part of Dunklin county.

BREESE, ILL.—The People's Telephone Company is installing a first-class plant at Breese.

HUNTINGBURG, IND.—Many new lines are being built by the Dubois County Telephone Company.

SIOUX CITY, IA.—The Cudahy Packing Company is building a private telephone line between Sioux City and South Omaha.

WAMEGO, KAN.—Among the improvements planned by the Wamego Telephone Company is the installation of a new switchboard.

CHASKA, MINN.—Among the improvements planned by the Norwood Young America Telephone Company is the installation of a new switchboard.

KANDIYOHI, MINN.—The Eastern Union Telephone Company expects to greatly improve and extend its system.

PRINCETON, MINN.—A new exchange is to be installed by the Rural Telephone Company.

CLINTON, MO.—Many extensions and improvements are under way by the Union Telephone Company.

DONIPHAN, MO.—The Mutual Telephone Company, which has recently refused connections with the Bell company at Doniphan, is about to install its system.

AUBURN, NEB.—The Auburn Telephone Company, which was recently granted a franchise at Auburn, contemplates the rebuilding of its entire system. A new building is to be erected, a new switchboard installed, and the plant made thoroughly up to date in all particulars.

RHYOLITE, NEV.—The Southern Nevada Consolidated Telegraph & Telephone Company contemplates the erection of a line from Rhyolite to Lee.

GREAT BEND, N. Y.—New lines are being erected by the Northeastern Telephone Company at Great Bend.

SANDY HILL, N. Y.—The Commercial Union Telephone Company has constructed a line from Sandy Hill to Fort Edward.

BUCYRUS, O.—In addition to extending its lines in the city of Bucyrus, it is the intention of the Bucyrus Telephone Company to build ten new rural lines. It is estimated that about seven thousand feet of cable will be strung.

LEIPSIC, O.—The Putnam County Telephone Company is making improvements in its system.

RAVENNA, O.—It is the intention of the Portage County Telephone Company to expend in the neighborhood of $20,000 in Ravenna for the improvement and extension of its system. An entirely new central office equipment will be installed and additional cables placed in many sections of the city.

PHILADELPHIA, PA.—To facilitate the handling of its freight business, it is reported that the Pennsylvania Railroad will very soon arrange for the installation of a telephone system between Wilmington and Washington.

WALTERBORO, S. C.—A new switchboard is being installed by the Colleton County Telephone Company, and other improvements in its system are planned.

POINT PLEASANT, W. VA.—A new four hundred and fifty line switchboard, which will necessitate using about three thousand feet of cable, is to be installed by the Point Pleasant Telephone Company. It is also the company's intention to construct a new toll line to connect with the Charleston Home Telephone Company, and to rebuild its toll line to Mason City.

CASCO, WIS.—It is the intention of the Casco and Brussels Telephone Company to make many improvements and extensions in its system at an early date.

SUPERIOR, WIS.—Many extensions are to made in the lines of the Peoples Telephone Company.

UNDERGROUND.

RENO, NEV.—The wires of the Reno Telephone Company are to be placed underground in the business section of Reno.

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PINS · BRACKETS · CROSSARMS

Pin up your arms with Creosoted Beech Insulator Pins; they stand "pat". Write for prices.

M. P. OSBORNE & SON
Camden, New York

CROSS ARMS CAR LOTS OR LESS
YELLOW PINE OR CYPRESS
DIRECT FROM MANUFACTURERS
FERGUSON LUMBER CO., LITTLE ROCK, ARK.

LOCUST PINS AND CROSS ARMS YELLOW PINE, IN TOLEDO FOR QUICK SHIPMENT.
THE F. BISSELL COMPANY.
TOLEDO, O.

We Make a Specialty of Telephone Poles.
POLES
Large Stock
16 to 25 ft.
4 to 6 in. Tops
For Rural Lines
YARDS:
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Cloquet, Minn.
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FRANCIS BEIDLER & CO.
459-519 W. 22d St.
CHICAGO, ILL.

WHITE CEDAR POLES Longest Lasting Best Grade
OUR NEW STOCK COMING IN 100,000 TO 150,000 BY APRIL 1st
26 YEARS HAVE WE BEEN PRODUCING POLES. WRITE US
Yards { Omer, Bay City and Boyne Falls
W. C. Sterling & Son Co., Menroe, Mich.

WHITE CEDAR POLES
Buy from the Producers and Save Jobbers' Profits.
PENDLETON & GILKEY, - Minneapolis, Minn.

POLES
20 and 25 foot lengths for rural telephone lines a specialty.
PORTER CEDAR CO., Saginaw, Mich.

CHESTNUT — CEDAR — CYPRESS
POLES and PILING
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THE F. BISSELL COMPANY
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FOR CEDAR POLES
Write
G. N. WAGNER LUMBER AND SHINGLE CO.
923 MICHIGAN TRUST BUILDING ::: ::: GRAND RAPIDS, MICH.

SILK COVERED **MAGNET WIRE**
For Telephone Construction Purposes
Prompt attention given to quick delivery orders.
FRANK B. GRIFFIN
Manufacturer of FINE INSULATED WIRE
OSHKOSH, WIS.

POLES
Michigan No. 1 White Cedar
¶ Write us, giving the number of Poles you require of each size and point at which you wish them delivered, we will be pleased to quote you *Special Prices* F. O. B. your station.
WARNER LUMBER CO.
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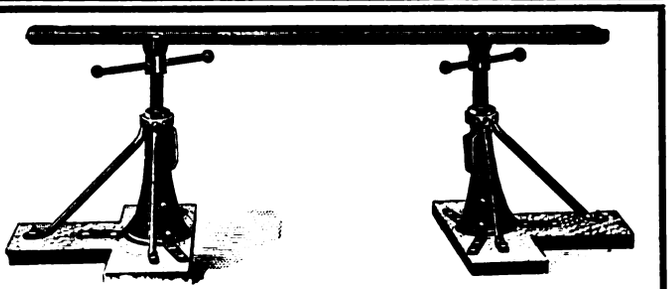
PRODUCERS AND MANUFACTURERS.

In Advertising Lies Success for You and Yours, But Not In Advertising Lies.


Cable Reel Jacks and Bars, Cable Reel Wheels, Manhole Skids and Sheaves, Alley Arm Braces, Angle Iron Cable Arms, Capstans.
HALLETT IRON WORKS
92-96 West Polk Street Chicago, Ill.

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GENERAL ELECTRIC COMPANY
HARRISON, N. J.
EDISON
TELEPHONE LAMPS
869

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BJUR HIGH DUTY
NEW YORK
BATTERIES
FOR EVERY SERVICE
GENERAL
STORAGE BATTERY CO
General Offices
42 Broadway, New York
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That's Our "New Form"
Many companies are now using it, and all are pleased. Ask for circular describing it. Order early and avoid the rush.
WE ALSO FURNISH
Toll Tickets. Trouble Tickets.
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All kinds of blanks, books and forms for Telephone and Toll Line Accounting. Write for sample forms and prices.
TELEPHONE PRINTING COMPANY
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The Celebrated
DONNELLY CLIMBER
is made of the toughest and best steel obtainable. It is guaranteed not to break. You can trust your life to it with perfect safety.
The Donnelly climber is now made exclusively by
The Blakeslee Forging Co.
PLANTSVILLE, CONN.
Write for Free Booklet.

M. LANZ & SONS
Manufacturers of
Angle Steel Cable Arms
We Galvanize by the Hot Process
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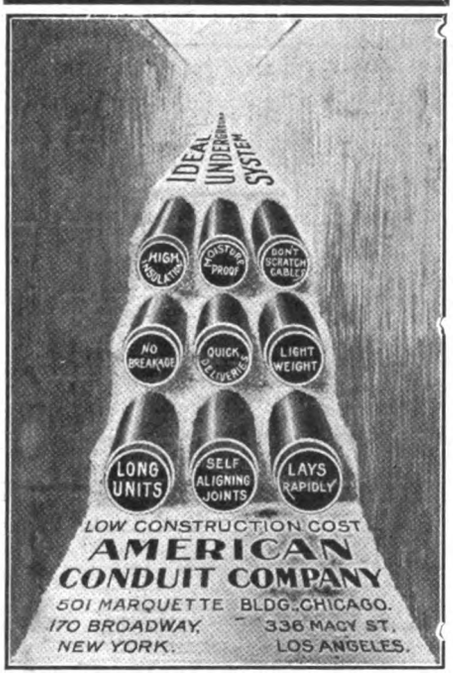
Telephone and Telegraph Properties
MONADNOCK BLOCK CHICAGO



BEWARE OF IMITATIONS

For the protection of our customers we advise that Klein's Pliers are being imitated to LOOK LIKE KLEIN'S. This, however, does not make them Klein's. CAUTION. Look for this stamp, M. KLEIN & SONS, on the inside of handles—NONE are genuine without this stamp.
Use only genuine Klein's. They are the product of years of experience and have stood the test of time.
MATHIAS KLEIN & SONS · CHICAGO, ILL.

WESTON
STANDARD PORTABLE DIRECT READING
Voltmeters, Ammeters, Millivoltmeters, Voltammeters, Milliammeters, Ohmmeters, Portable Galvanometers, Ground Detectors and Circuit Testers.
Our Portable Instruments are recognised as THE STANDARD the world over. Our STATION VOLTMETERS AND AMMETERS are unsurpassed in point of extreme accuracy and lowest consumption of energy.
WESTON ELECTRICAL INSTRUMENT CO.
Main Office and Works, Waverly Park, NEWARK, N. J.
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Manufacturers of
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TELEPHONE ENGINEERING AND CONSTRUCTION
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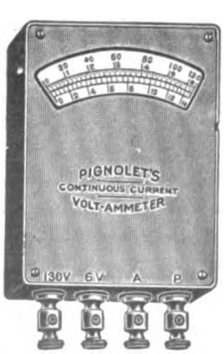
TO BE FOREWARNED IS TO BE FOREARMED


If you are not using a measuring instrument to test your lines, get one at once, as you will need it many times before the summer comes. It would be just as sensible for a grocer to try and sell sugar by guessing at its weight as it is for you to try to locate a fault in a line by the same method. PIGNOLET VOLT-AMMETERS are designed to give the best results required for testing purposes. They are not complicated nor do they require experts to operate them. Another point in their favor is their low cost. There is no instrument on the market which will give you as accurate results at anything near the price. Hadn't you better write for prices and further particulars By buying one now you will save its cost many times over before you have had it a year.
LOUIS M. PIGNOLET, Originator of the Voltmeter Habit
78 CORTLANDT ST., N. Y.

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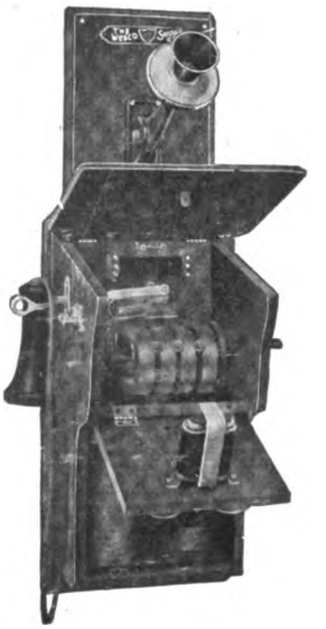
Quality Higher Than Price

¶ It's an easy matter to talk quality and price, but quite another to produce the goods to back it up.

¶ We have always put more faith and dollars into securing good materials and employing skillful and intelligent labor in the manufacture of our telephones than in advertising the fact, and the careful buyers are beginning to find it out.

¶ Prejudice and ignorance may hold the fort for a day, but merit and fair dealing in the end are invincible.

¶ We solicit your inquiries and an opportunity to quote prices and submit samples of our product.



THE WESCO SUPPLY COMPANY

"Everything Electrical"

Branch Warehouse
Fort Worth, Texas

ST. LOUIS, MISSOURI

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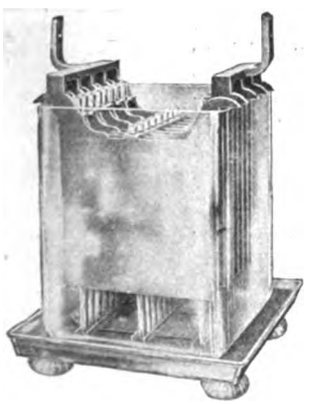

Viewed from the standpoint of scientific theory, no other storage battery plate can compare, detail for detail, with the Gould Integral Plate. Many of the largest Telephone Companies in the United States have purchased Gould Storage Batteries on the *very apparent* merit of our battery. It is a most significant fact that in almost every such case *repeat orders* have followed the first test order. The Gould Battery has succeeded because it has made good our claims for its unusual merit and economy.

Write for our catalogues.

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JUST A SUGGESTION

Take one of your busy 4-party lines and equip it with "POOLE" Lock-Outs. Leave it in service a month and then see how many of the four will stand a raise of $3.00 a year rather than go back to the old way. We know the answer, but we want your subscribers to impress on you the fact that the "POOLE" Lock-Out is a rate-raiser.

It won't cost you anything to try it, because we will loan you the Lock-Outs free and there is no other equipment required. Write today for our Booklet AL-2.

Mountain State Electrical Company

WHEELING, W. VA.

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DEAN TELEPHONE APPARATUS

Magneto Switchboard Protection

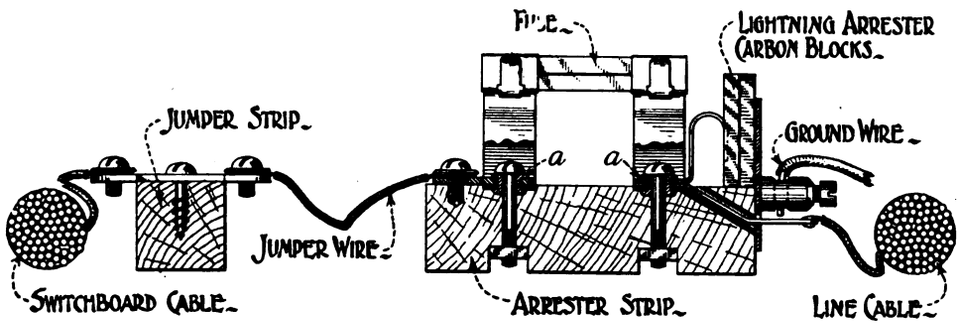

Diagram of a line wire connection through the new Dean arrester and cross connecting board.

The above diagram shows very clearly why our magneto switchboard arrester and cross connecting frame eliminate many troubles from your exchange circuits.

First: The circuit from the line cable to the switchboard cable is through a metallic path, not dependent on clamping of parts through wood or other insulating material. The line cable clips, the jumper wire fasteners and the ground spring are securely riveted to the fuse clamps by hollow rivets *a, a.*

Second: The fuses are securely clamped in a new type of spring clip which it is impossible to spread so as to spoil the tension.

Third: These spring clips are attached to the mounting by machine screws and nuts, the head of the screw being exposed so as to be accessible from the front side of the strip. The nut is held from turning by resting in a groove on the other side of the mounting strip.

Fourth: Large, serviceable jumper rings are provided. They are insulated by a tough enamel glazing.

Fifth: The arresters and jumper strips are made in units of ten pairs each and are mounted for use on a channel iron frame work.

Sixth: The carbons, micas and fuses are all of standard size, easily removed and replaced and the kind that are not conducive to trouble.

Seventh: All of the springs are made of the best grade German silver, and other parts of the same quality of material.

This new Dean arrester and cross connecting frame is a fitting companion to our new Express Type Switchboards.

If you are having trouble with your present equipment, let us know your requirements. Our prices might be of interest.

Our new folder No 6 describes in full our various types of Express Type Switchboards. A copy of this folder will be mailed free on request.

Factory and General Office
Elyria, Ohio

Branch Office
Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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Stromberg-Carlson Telephone Mfg. Company

Rochester, N. Y. March 2, 1907.

TO THE EXCHANGE MANAGER AND TELEPHONE USER:

More telephone men will try "STROMBERG-CARLSON" Switchboard and Telephone Cords because our letter of February 23rd interested many.

Receiver and Desk Telephone Cords that will perform constant service satisfactorily are "STROMBERG-CARLSON" braided copper tinsel thread and green spun machine silk insulated cords.

We manufacture these cords in any lengths, equipped with a variety of standard terminals on either or both ends, and for use with all forms of telephones.

SPECIFICATION EACH CONDUCTOR.

First:- Sixteen (16) ends braided copper tinsel thread. Average breaking strength each thread not less than 24 ounces. The copper ribbon, .013" wide x .001" thick, shall be at least 98% pure copper laid flat upon a cotton thread.

Second:- Braiding #20 - 2 ply green cotton thread, 16 spindles, 1 thread. Average breaking strength each thread not less than 25 ounces; yardage per pound shall be 8400, and the twist not less than thirteen to the inch.

Third:- Braiding green spun machine silk 24 spindles 1 thread.
Average breaking strength each thread 48 ounces.
Yardage per ounce shall be not less than 570 nor more than 630.

Fourth:- External braiding over all conductors, green spun machine silk, 32 spindles 1 thread.

All materials used in "STROMBERG-CARLSON" Cords are purchased under our standard specifications that demand the best materials.

May we send you a few samples by next mail?

Yours very truly,

CL No.2. Stromberg-Carlson Tel. Mfg. Co.

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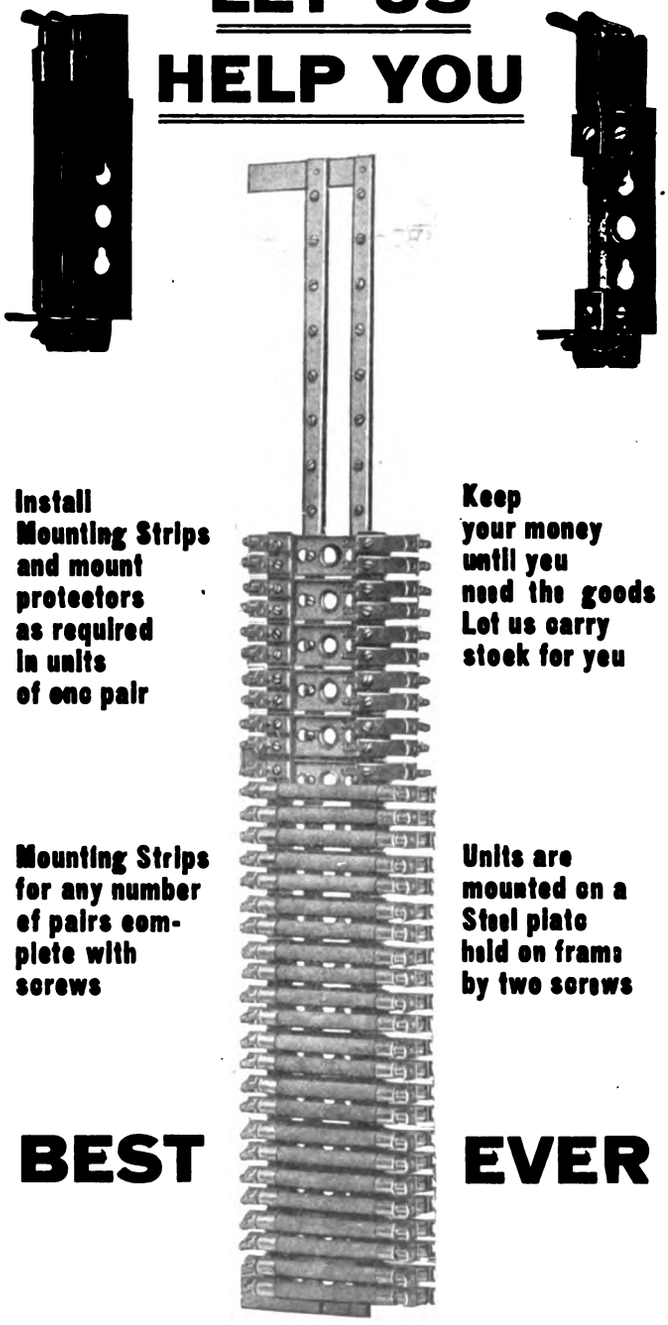
INSTALLMENT PLAN

UNIT TYPE FUSE AND CARBON PROTECTION

LET US HELP YOU



Install Mounting Strips and mount protectors as required in units of one pair

Keep your money until you need the goods Let us carry stock for you

Mounting Strips for any number of pairs complete with screws

Units are mounted on a Steel plate held on frame by two screws

BEST **EVER**

Sterling Electric Co.

Makers of Good Goods

LaFayette -- -- -- Ind.

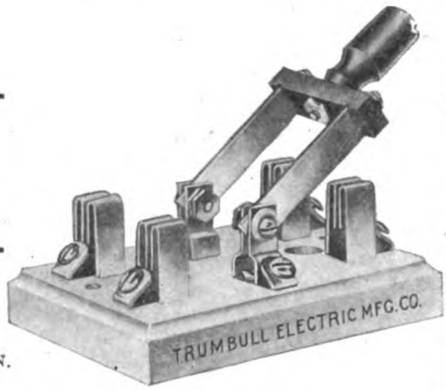
NOTICE THE CLIPS

On account of their peculiar design, they spring toward the blade and make a perfect self-adjusting contact.

TRUMBULL TELEPHONE SWITCHES

NOTICE THE RECESSES

The clips are held firmly in recesses on the bases and can not get out of alignment.



WRITE FOR OUR NEW BULLETIN.

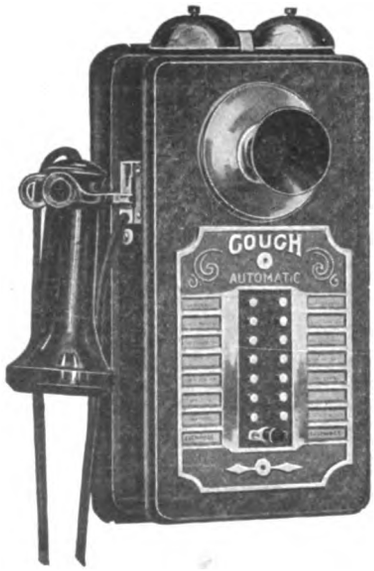
WE WILL SEND YOU SAMPLE FREE.

EACH SWITCH INSPECTED BEFORE LEAVING THE FACTORY

The Trumbull Electric Mfg. Co.

NEW YORK 136 Liberty St. PLAINVILLE, CONN. BOSTON 65-67 Oliver St.

• Rent your subscribers a system of



Couch Automatic Intercommunicating Telephones

with trunk button for exchange connection.

It's an "operator-less" private branch exchange, giving automatic intercommunication between departments.

Any station can secure immediate city exchange connection by the pressure of the trunk button.

Ask us about it

STANDARD SIZES:

8	intercommunicating buttons,	1	exchange button		
14	"	"	1	"	"
18	"	"	1	"	"
24	"	"	1	"	"
28	"	"	1	"	"

100% CHEAPER THAN BRANCH EXCHANGE

100% QUICKER; 100% MORE SATISFACTORY.

S. H. COUCH CO., Inc., Manufacturers

162 PEARL STREET, BOSTON, MASS.

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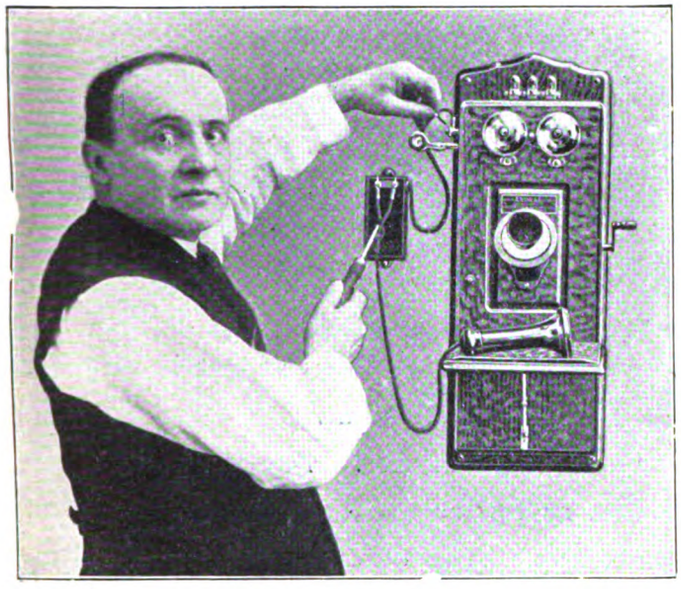
ANDRAE



Talks With the Trouble Man

For twenty-five years I have been in the working end of the telephone business. I have chased all kinds of troubles in all kinds of places. I have seen the development of the party line system with all of its new troubles and advantages to the telephone man. Many a time I have been sent out into the country to learn why a subscriber's bell did not ring and struggled in vain to locate the trouble, only to find that others on the line either had their receivers off the hook or took them down before the signal was finished. I have heard the operator grumble and the exchange manager swear, but never found any means of stopping the trouble made by "RUBBER-NECKS" until the development of the party line condenser.

These furnished the greatest comfort we had ever known and to-day there is no necessity for an exchange manager to worry about **receivers off the hook.** The day is not far distant when a party line telephone without a condenser will be as rare as the old "Blake Transmitter."

No Trick At All. **CONDENSERS**

Condensers can be installed on any telephone in **10 minutes' time with no tools but a screw-driver.** You simply disconnect the receiver cords and put the condenser cords in their place; then connect the receiver cords to the binding posts on the condenser and the job is done. Probably no piece of telephone apparatus has grown in favor with such rapidity as the Andrae Patented Iron Case Condensers. Telephone companies are adopting them all over the country, and letters are received daily with expressions of the greatest satisfaction and orders for more condensers. A 30 days' trial can be had **at our expense** with no strings to it.

JULIUS ANDRAE & SONS CO., **Write for Cat. No. 11 and No. 24**
99 W. WATER STREET
MILWAUKEE

LOOKING FOR TROUBLE?

Suppose you have a line in trouble—grounded or open. You don't know the exact location, but you send out a troubleman to hunt it up and clear it. It may take him an hour or a day. Meanwhile the subscriber is getting hot under the collar and saying things about telephones in general and yours in particular.

If you have a Pignolet voltmeter or volt-ammeter you can determine the approximate location and also get an idea of the nature of the trouble. With the information your troubleman can find the fault in jig time, and you will have prevented the subscriber kicking by giving him service at the earliest possible moment.

Does it pay to be informed? You ought to know.

LOUIS M. PIGNOLET, Originator of the Voltmeter Habit
78 CORTLANDT ST., N. Y.

THE STANDARD

"HEMINGRAY"

All With The

"Patent Drip Petticoats"

The Hemingray-Glass Co., **Office, Covington, Ky.**
Factory, Muncie, Ind.
ESTABLISHED 1848

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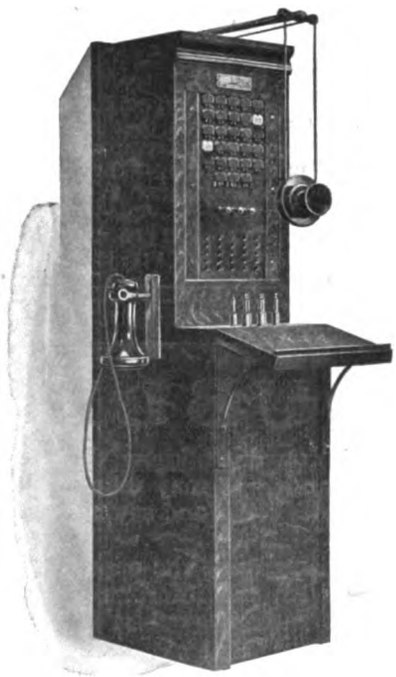
NORTH'S

WALL CABINET SWITCHBOARD

A NEW DESIGN

This Switchboard has capacity for fifty magneto lines. The cabinet is built for mounting on the wall in a manner similar to a telephone instrument.

Line drops and jacks—separate—put up in strips of five. Buy for your immediate needs only. Get a cabinet fully wired, with as few as five lines equipped. When you want to increase, buy a strip of drops and jacks and install them yourself. Simple and easy—screw the strips to the mounting frame and solder on the wires. Wired and equipped with three standard cord pairs.



Built with the same care and attention to details as the larger boards—apparatus the same standard parts.

Oak cabinet, kiln dried, hand polished. Back panel hinged in such a manner that when screwed to wall the entire front part of cabinet may swing around, admitting access to all parts.

The drops are very sensitive and free from cross talk---coils incased in soft iron shells—not tubes of sheet steel formed up, but solid Norway rods bored out. Mounted in banks of ten—apart from jacks.

The jacks also mounted in strips of ten and easily removed. Aluminum base, German silver springs and pure platinum contacts. They cut out both sides of drop and keep line balanced.

Roller bearing keys with German silver springs and platinum contacts.

If you expect to install a switchboard in the near future, write for further details and let us give you an estimate.

THE NORTH ELECTRIC COMPANY

DALLAS CLEVELAND KANSAS CITY

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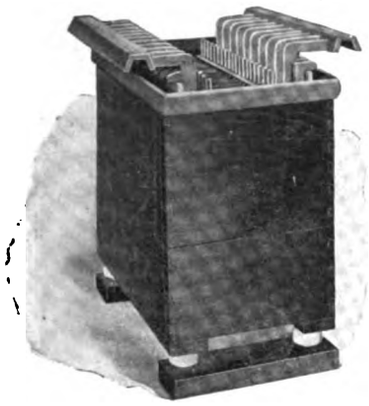

The features of the

Batteries

differ from all others both mechanically and chemically in certain respects sufficient to give them desirable characteristics, and are set forth in Catalogue A. Write for it.

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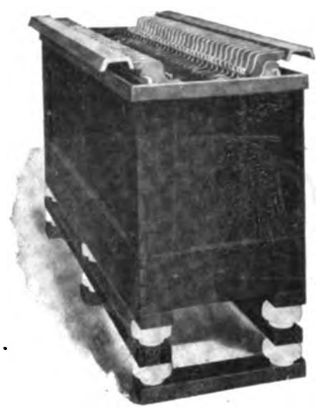

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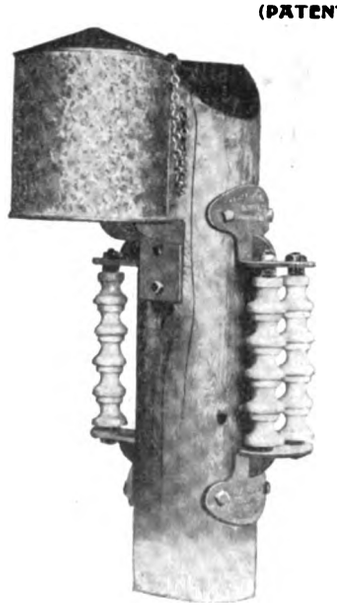

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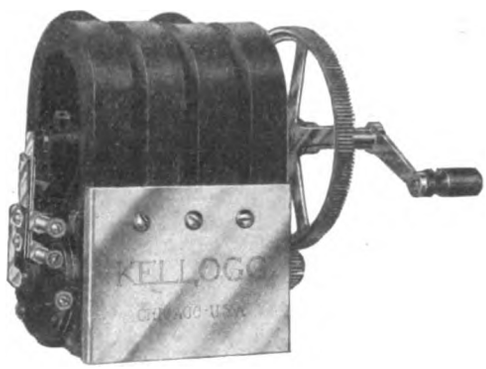

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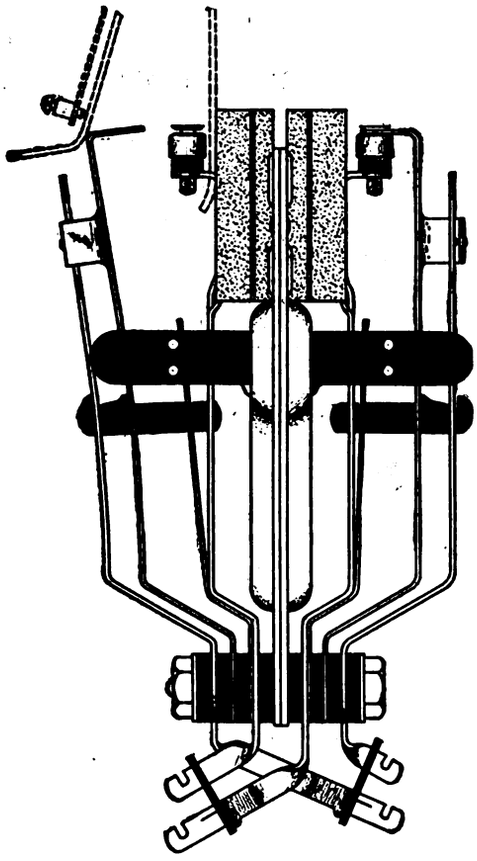

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Then why should you start a manual telephone exchange in this age of automatics, if you want to make money out of the telephone business?

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There is no more question as to the relative popularity of the automatic and manual telephone service where the two kinds are in competition than there is as to the relative popularity of the trolley car and the horse car.

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Ferguson, Mo.
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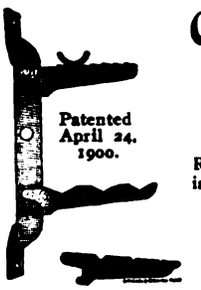

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VOLUME XV. SATURDAY, MARCH 2, 1907. NUMBER 9

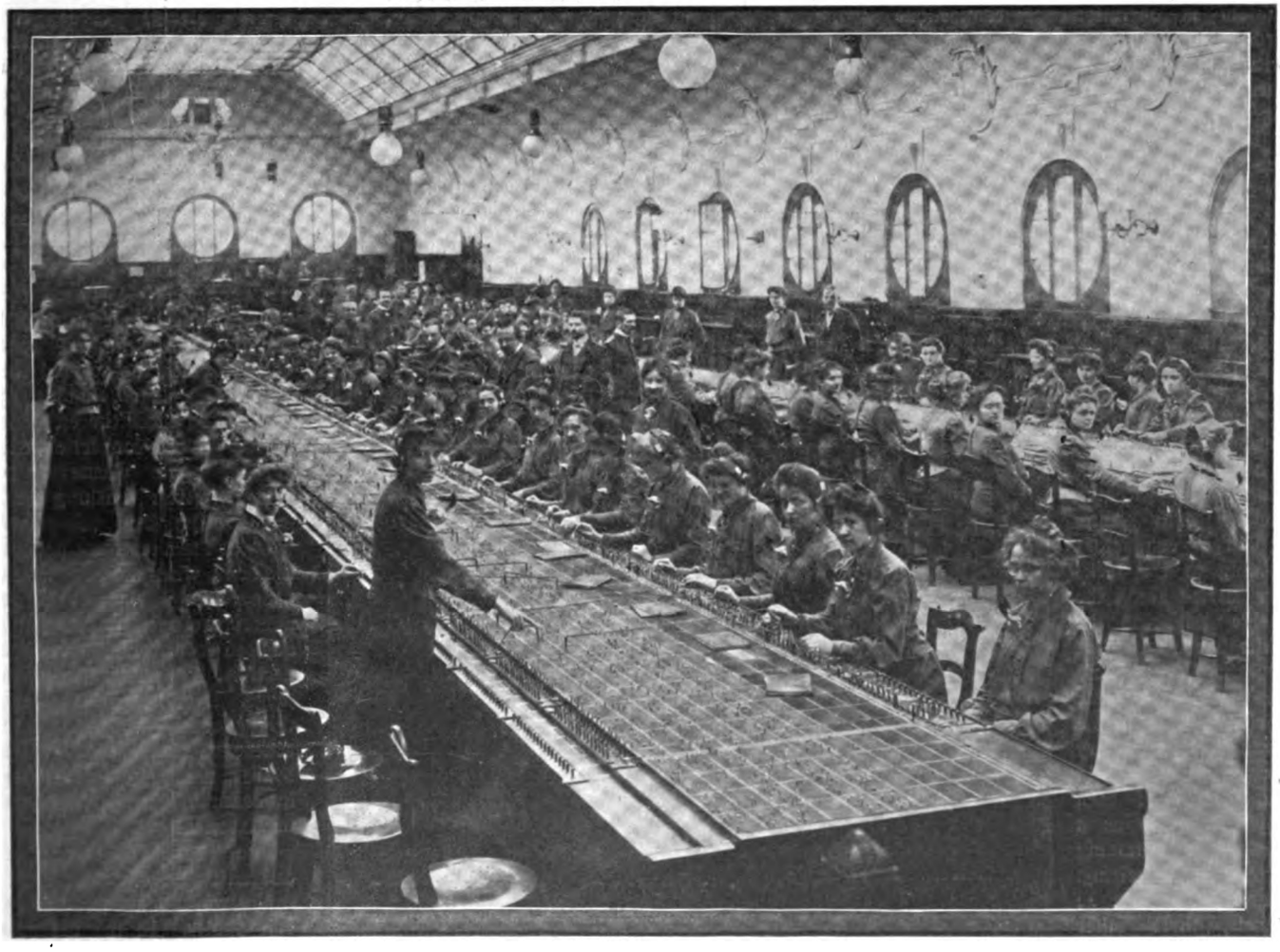
Berlin VI—A 24,000-Line Exchange

By Dr. Alfred Gradenwitz.

As stated in previous issues of this journal, the whole of the Berlin telephone service is being converted to the central energy system with automatic calling of the exchange and automatic disconnect signals at both ends of the connection.

The exchange Berlin VI, which was opened to public service a few months ago, is one of the largest telephone exchanges in the world, and when it was cut into service the conversion above referred to made an advance which produced a marked public impression. Whereas the exchanges of the cities of Breslau, Leipzig, Nuremberg and Charlottenburg, operated on the same system and which have been cut into service within a short time, have a capacity of 20,000 lines each, the new exchange Berlin VI is designed for 24,000 subscriber lines and 2,100 trunk lines. Of this large number of lines 18,000 subscribers' lines and about 1,200 trunk lines for incoming business, with a similar number of outgoing trunk lines are being used at the present moment.

The new exchange is situated in the western part of Berlin, in a special building adjoining the new Post Office in Körner-Strasse. The switchboards are installed in two large halls, next the roof of the building, situated beside one another and connected together by transversal wings. Below these halls are installed on an intermediary story about 3 meters in height the frames intended for the relays, the intermediate distributing frame, and also the big main distributing frame. The intermediate story further comprises in a special room the large central office storage battery. Beside the battery room there is situated the charging plant, comprising two direct current motor generator units (used in duplicate) in addition to a switchboard for controlling the circuits to the battery. In the same room is located the ringing generator unit, comprising a direct current motor coupled to an alternating current generator, which supplies the alternating current required for calling subscribers. Immediately beside the



One Wing of the Operating Room in the New Exchange at Berlin.

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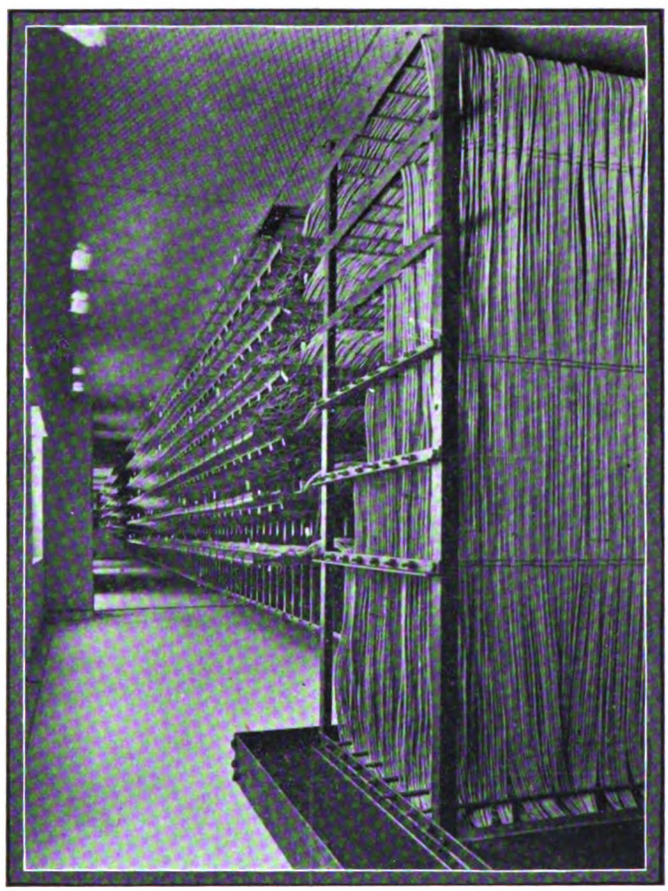
main distributing frame there is situated the wire chief's office, from which any disturbance in the service may be located. In the story situated below the intermediary story there are located the managing offices as well as cloak rooms and refreshment rooms for the male and female employees.

The switchboards are of the horizontal type which are used because they are asserted to possess the advantage of smaller space requirements. The arrangement of connections is such that only the two external circuit lines are used inside of the system, that is a two-wire multiple is used. This makes possible still further saving in space.

The two halls, each of which is about 15 meters in length and ten meters in breadth, at the present moment comprise 42 panels with 6 operating seats each. Of the 252 operators' positions 126 have been set apart for handling the subscribers' lines. The operators' positions reserved for subscribers on the flat-rate system each comprise 120 calling lamps, while those intended for subscribers on the measured service system contain 200 calling lamps. The 2,100 incoming trunk circuits, that is to say the lines connecting the exchange with the remaining telephone exchanges of the city of Berlin, are distributed among 126 operators' positions. About 1,000 outgoing trunk circuits, or, as they are called by the German engineers, "Starting exchange connecting lines" are at present in operation for connections ordered by subscribers to the exchange with subscribers to other exchanges; these are equipped with visual "busy" signals.

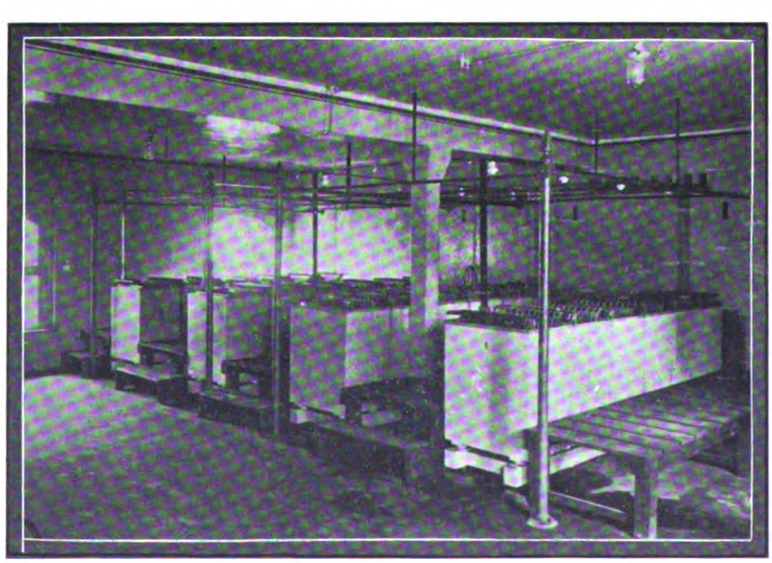


A View of the Mammoth Intermediate Distributing Frame, which is Exceptionally Well Lighted.

The individual switchboard sections are 2.16 meters in length and 1.40 meters in breadth. Their frames are made up of flat and angle iron, resting on the floor of the intermediary story. For handling any required connections, each operator's position in addition to the necessary calling lamps and corresponding answering jacks, has been equipped with 15 pairs of cords connected respectively to inquiry (answering) and connecting (calling) plugs, a supervisory lamp associated with each cord, and a set of keys for each cord. The lamps and plugs are combined in sets of ten each in composite hard rubber and metal strips, and are fitted beside one another, the corresponding plug being situated behind each lamp.

The conductors leading to the jacks are carried along the inside walls of the switchboard frames in the shape of 21 pair cables. A convenient corridor, accessible from the intermediary story, is reserved in the middle of each row of panels as a means of obtaining access to the wiring. Outside of these 42 panels, three other panels (called switching panels) will effect any connection between subscribers and the long-distance telephone exchange situated in Französische Str. These panels comprise four operating seats each, viz.: two on either side, and a multiple switchboard containing 8,000 jacks. Special official lines have been set apart for communication with the local and long distance exchanges.

Many methods of handling calls are in use in Europe. At this exchange the following description will illustrate the method on which the service is carried out, and give incidentally, by means of literal translations, an index to the most common forms of designating telephone apparatus in use by German engineers. As soon as the subscriber calling up the exchange takes his receiver off the hook, his calling (line) lamp at the exchange will be lighted. The operator answers the call by inserting the inquiry (answering) plug of any disengaged pair of strings (cords) into the inquiry (answering) jack situated immediately behind the lighted lamp, while placing the corresponding talking switch (listening key) in the inquiry (listening) position, when the calling (line) lamp will be extinguished. The subscriber then states the connection desired, and the operator, after inserting the other plug, known as the connecting (calling) plug, into the multiple switch jack of the desired subscriber calls him by throwing the key into calling (ringing) position. From this ringing position, the key, of its own accord, returns to its normal position when the desired connection will be obtained. The supervisory lamp enables the operator to check the existence of any desired connection, calling up again whenever required. After finishing their conversation both subscribers will put their receivers back on the hook, when the two "finish" (supervisory) signals will be lighted, the operator being thus advised to discontinue the connection by withdrawing the plugs. It will be observed that this process, in spite of the difference in types of switchboards, is the same as is used in common battery exchanges in America.



The Battery Room and Storage Battery Plant in the New Exchange "Berlin VI."

The subscribers' lines are carried to the exchange nearly exclusively underground in 250 pair cables. In the basement these are each subdivided into

(Continued on page 147.)

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The Texas Convention

THE best meeting the Texas Independent Telephone Association ever held was the one in the court house at Fort Worth on February 21st and 22d. Over seventy delegates were present from all over the State, representing about 8,000 circuit miles of toll line and 35,000 telephones. Mr. J. C. Casler, president of the association, was in the chair, and appointed Chas. F. Speed temporary secretary in the absence of C. A. Shock.

The president immediately appointed the following committees:

Nominations: Mr. Johnson, Corsicana; Mr. Roberts, Abilene; Mr. Chamberlin, Greenville; Mr. Emmer, Beaumont.

Ways and Means: Mr. Earle, Waco; Mr. Speed, Texarkana; Mr. Marrs, Dallas; Mr. Davenport, Hillsboro.

Constitutional: Mr. Conway, Beaumont; Mr. Mosely, Weatherford; Mr. Roberts, Abilene; Mr. Gould, Ennis.

Auditing: Mr. Macune, Sipe Springs; Mr. Armstrong, Weatherford; Mr. Smith, Weatherford.

Legislation: Mr. Earle, Waco; Mr. Martin, Llano; Mr. Mosely, Weatherford; Mr. Samuels, Fort Worth; Mr. Chamberlin, Greenville.

It was moved by J. B. Earle that the chair be ex-officio a member of each committee, and carried by vote of the members.

The legislative bills now in the House of Representatives were read and the secretary was instructed to have copies made for each member. The president was instructed to telegraph all absent members to come at once. The meeting then adjourned until 1:30 P. M.

J. C. Casler and J. B. Earle at the Texas Convention.

At the afternoon meeting the president introduced the Mayor of Fort Worth, the Hon. W. D. Harris, who welcomed the delegates and in his excellent address made a special point of the high service rendered by the Fort Worth Telephone Co. and paid a high tribute to the efficient management of the company by Mr. J. C. Casler. Sidney L. Samuels responded to the mayor's address.

The Committee on Ways and Means recommended that the by-laws be changed to make the dues to the association 2½ cents per telephone used and 2½ cents for each circuit mile of toll lines; manufacturers' dues, $12.50; individual membership dues, for employes of companies, $1 per year. It was further recommended that the association reimburse the delegates to the amount of their railroad fare to and from convention. After considerable discussion as to whether the dues as fixed would provide ample funds, it was decided to delay action until the members could give the matter proper thought. The Auditing Committee reported that it had examined the records of the secretary, found them to be correct and certified to the amount of cash in the treasury. The meeting adjourned at 4 P. M. to give the delegates an opportunity to see the exhibits of the manufacturers and prepare for the evening entertainment, which had been provided by the manufacturers and supply dealers represented in Texas.

At 7:30 P. M. seventy-five delegates met at the Exchange building of the Fort Worth Telephone Company and marched in a body to Greenwall's Theatre. After the play a banquet was given at the Delaware Hotel.

The ladies who had accompanied their husbands to Fort Worth were provided with special seats at the theatre and served with a luncheon at the Touraine Hotel. The manufacturers who acted as hosts at the entertainment were the Electric Appliance Company, Zinc Oil Pole Company, National Lumber Company, Woods Electric Company, North Electric Company, Wesco Supply Company, Hobson Electric Company, Stromberg-Carlson Manufacturing Company, National Carbon Company, Frank B. Cook, Central Telephone and Electric Company, and the Standard Underground Cable Company.

The delegates expressed themselves as highly pleased with the entertainment. Considerable favorable comment was made on the fact that no liquor of any kind was served by the hosts.

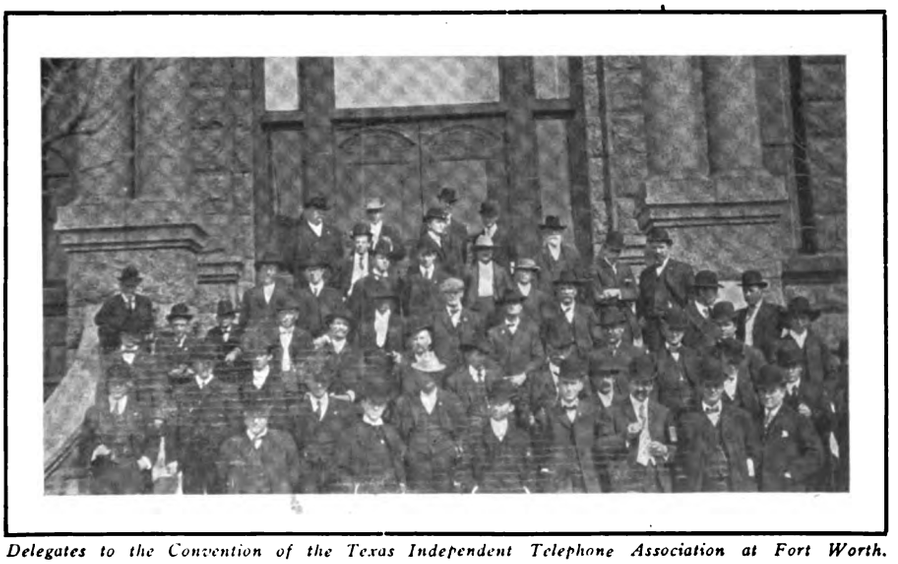
The early morning hours of Friday were taken up with a visit to the packing plants of Swift and Armour, a special car being provided by the Fort Worth Telephone Company. Upon returning to the hall the association went into executive session. The first subject discussed was that of permitting manufacturers' representatives who had holdings in telephone properties to be admitted to the executive session. This was decided in the affirmative, and the committee on legislation made a report which caused discussion until the noon hour, when adjournment was taken until 1:30 P. M.

The Committee on Legislation reported the following resolutions which relate to two specific bills now before the Texas Legislature:

RESOLVED, In the matter of the physical contact bill, known as House Bill No. 24, that the Independent Telephone Association hereby begs to submit to the legislature now in session that House Bill No. 24, undertaking to force a connection between our properties and those of the Bell telephone company, we believe will be disastrous. We respectfully submit that this bill will stop further development and commit the telephone companies to a policy in vogue before the expiration of the Bell patents in 1895. This we declare to be contrary to Democratic principles such as were set forth in the last Democratic convention, as well as the previous conventions, condemning monopoly and forcing competition.

We beg to call the attention of the legislature to the rapid development of the telephone field in the last few years since our home people have undertaken and are building lines in all cities and towns of the State, together with the farmers' rural service that our members have been such extensive builders of.

Resolved, In regard to the rate bill legislation, that we, the Independent Telephone Association of Texas and Louisiana, in con-



Delegates to the Convention of the Texas Independent Telephone Association at Fort Worth.

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vention assembled, hereby petition the legislature not to pass this bill, assuring it that the rates allowed are not only too low to permit a reasonable profit, but we assert that it would be below the actual cost of operation, and the passage of such a bill will be confiscation of our property and would stop all development of the telephone business by both large and small companies over the entire State. The president is hereby instructed to appoint a committee to attend the next meeting of the committee before whom this bill will come for consideration and discuss the matter with it.

A resolution extending a vote of thanks to Mayor Harris and the city of Fort Worth for their hospitality; to the Confederate Veterans for the use of their hall; to the telephone manufacturers and supply dealers for the entertainment given the delegates; to the retiring president, Mr. Casler, for courtesies shown, and to the press of Fort Worth and to Swift and Armour packing companies for the attention given the members, was unanimously passed.

The Committee on Nominations reported as follows: The majority report made by Messrs. Casler, Roberts, Chamberlin and Emmer presented the following recommendations: J. B. Earle, president; E. M. Chamberlin, vice president; C. W. Roberts, second vice president; C. W. Emmer, third vice president; Chas. F. Speed, secretary and treasurer. The minority report was the same except it substituted the name of C. A. Shock for secretary and treasurer. Mr. Speed withdrew and the election of officers as recommended was voted.

Under the order of new business and general discussion Mr. W. L. Stadelman, travelling secretary of the International Association, explained in detail the work as now being carried on by the national organization. He gave an excellent talk which was received with considerable enthusiasm. A tracing showing all the toll lines in the State of Texas was presented to the association by Mr. Charles F. Speed.

An Executive Committee consisting of Messrs. Earle, of Waco; Johnson, of Corsicana; Casler, of Fort Worth; Gould, of Ennis, and Mosely, of Weatherford, was elected.

The Committee on Constitution and By-Laws has instructions to recommend a new constitution and by-laws, or such changes as may be deemed advisable. The next place of meeting is to be determined and announced by the executive committee.

The Convention of the Arkansas Association

THE Arkansas Independent Telephone Convention, held at the Hotel Marion, Little Rock, on February 18 and 19, was called to order by Eugene Hail, president, Mr. Mack Hammett acting as temporary secretary, in the absence of John B. King. The morning session was taken up with a general discussion and the appointment of committees, which were as follows:

Committee on Nominations: P. C. Ewing, G. T. Brown, H. L. Bernard.

Committee on Constitution and By-Laws: P. C. Ewing, Mack Hammett, A. E. Boqua.

Committee on Membership: Dr. K. E. Hudson, Dr. R. M. Drummond, Mack Hammett.

Committee on Ways and Means: Chas. F. Speed, Dr. K. E. Hudson, W. L. Caldwell.

At the afternoon session the Committee on Ways and Means brought in two reports; the majority report was as follows:

We, the majority of the Committee on Ways and Means, beg to report our recommendations as follows:

Exchanges doing business in the State shall pay annual dues of five cents per telephone unit, and that long distance companies shall pay five cents per circuit mile. That the Independent telephone manufacturers doing business in the State and exchanges outside of the State desiring to join the association may be admitted to the Arkansas Independent Telephone Association on payment of five dollars per year dues.

We further recommend that the constitution be changed to conform with the above.

(Signed) CHAS. F. SPEED,
W. L. CALDWELL.

Mack Hammett.

Dr. Hudson brought in a minority report as follows:

It is recommended that we assess a two dollar fee against all members of the association.

After considerable discussion, in which it seemed to be the idea to keeping the annual dues as low as possible, it was finally moved by P. C. Ewing that the annual dues of the Arkansas Independent Telephone Association be made one dollar for each member, and that each exchange pay one cent per unit per year, and that the long distance companies shall pay one cent per circuit mile, and this measure was adopted.

Among the companies represented at the meeting were the following: Home Telephone Company, Ozark; Little Rock Telephone Company, Little Rock; Pan Telephone Company, Fort Smith; Russellville Telephone Company, Russellville; Franklin County Telephone Company, Charleston; Pine Bluff Telephone Company, Pine Bluff; Felker Telephone Company, Ozark; The Telegraphone Company, Little Rock; Atkins Telephone Company, Atkins; Benton Telephone Company, Benton. All of these companies made regular payments of dues.

Among the manufacturers who gave exhibitions were Long Distance Telephone Manufacturing Company, South Bend, Ind.; E. B. Kramer, Russellville; Stromberg-Carlson Telephone Manufacturing Company, Rochester; Frank B. Cook, Chicago.

The committee instructed to investigate the proposed legislation relative to physical contact reported the following resolution:

To the Senate and House of Representatives of the State of Arkansas:

We, the officers and members of the Arkansas Independent Association, through its committee, do hereby recommend that Senate Bill No. 30, introduced by Mr. Lambert, do not pass, for the following reasons:

First. It is monopolistic in its nature, because, as we all know, competition helps the general public in all propositions.

Second. It is our opinion that the passage of a general law compelling two telephone companies to interchange business would result in forcing them to consolidate for their mutual protection. The consequence would be, we believe, a return to conditions practically the same as those prior to the time the patents expired in 1895. There is no line of business in which competition has not been found desirable for the protection of the public, the development of the field and improvement of the service. The results secured in the telephone field since the beginning of competition have amply demonstrated its advantages. Comparatively few people in the United States appreciate the rapid change in the telephone development during the past ten years. To-day there are twenty times as many telephones in use in both systems as there were at the time of the inception of competition.

Third. Should this bill pass, the telephone development would stop, and as in proportion to the stoppage of it the efficiency would also stop, to the disadvantage of the general public.

Fourth. Section 1, lines 10, 11, 12 and 13, provides that the long distance lines may refuse connections with the local company on the ground that the physical condition of such a company is not sufficient to guarantee good service. It also stipulates that the local company shall comply with regulations of the long distance company, but no provision is made whereby the long distance company shall comply

Eugene Hail.

P. C. Ewing.

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with the regulations of the local company, and it leaves it optional as to whether the long distance company shall make connections or not.

Fifth. We also further object to the amendment to Section 2, which provides for the payment of ten per cent. (10%) to the local companies by the long distance companies for originating business. This, we believe, is unfair and unjust, as it is not sufficient compensation for the amount of service rendered. The originating of telephone business necessitates a certain amount of clerical work, making out accounts, etc., and in the event of poor collections, no collecting agency would take these necessarily small amounts and collect them for the ten per cent., as this amendment provides that the originating company shall pay to the long distance company ninety per cent. (90%) of such business at the end of each month, thereby holding the local company responsible for all out-going messages.

We respectfully ask your honorable body not to pass this bill. It is a matter of vital importance to every citizen of the State of Arkansas, and the passage of the same would work a hardship on the general public by forcing upon them a monopoly in the telephone business.

Signed, R. M. Drummond, chairman; W. H. Felker, R. E. Hudson, secretary.

A. E. Boqua.

The Committee on the Constitution recommended, first, that Section 3 be changed so as to read, "Each member of this association shall be entitled to a seat in the convention, but voting power shall be governed by the number of units represented by the telephone company; each multiple of five hundred or a fraction thereof shall be entitled to one vote. Independent telephone manufacturers and supply dealers can become members of this association by payment of one dollar annual dues, but they shall not be entitled to a vote."

Second, that in each case where the word "Directors" appears in the Constitution, the word "Trustees" shall be substituted. These changes were adopted.

Mr. Boqua suggested that the secretary have copies made of the proposed Senate Bill No. 30, and the resolution passed by the association, and that a copy be forwarded to each Independent telephone company in the State not represented at this meeting. He also suggested that the secretary write and mail a letter to each requesting that he correspond with his senator and representative in an effort to show the true conditions.

Tuesday morning's meeting came to order at 10 o'clock.

The president appointed the following Committee on Legislation: P. C. Ewing, Mack Hammett, Chas. F. Speed.

The election of officers resulted as follows: P. C. Ewing, Little Rock, president; A. E. Boqua, Fort Smith, vice president; Chas. F. Speed, Texarkana, secretary; Mack Hammett, Pine Bluff, treasurer; C. L. Humbert, Jonesboro, trustee.

The above officers were elected unanimously and constitute the board of trustees.

It was moved by A. E. Boqua that "the Arkansas Independent Telephone Association extend its thanks and appreciation to the International Independent Telephone Association for sending its traveling secretary, W. J. Stadelman, to its meeting, and voice our appreciation to Mr. Stadelman in person for the interest shown and information he so kindly furnished us." and unanimously passed by the members of the association.

On motion of Dr. Hudson it was voted to hold the next meeting at Fort Smith. At the close of the meeting the individual members spoke with enthusiasm of the prospects for growth this year.

A Group of Members of the Arkansas Independent Telephone Association at the Convention.

DATE OF CONVENTION OF MISSOURI INDEPENDENT TELEPHONE ASSOCIATION ANNOUNCED.

THE annual convention of representatives of the Independent telephone companies in Missouri will be held at the Kupper Hotel, Kansas City, Mo., April 24 and 25. This was decided upon recently at a meeting of delegates representing the several districts of the State.

There are now said to be about 175,000 telephones in the State classed as Independent. At the coming convention there are expected to be about 200 representatives and visitors. Important subjects will be discussed having a bearing upon matters of operation and development. During the past year the organization of the associated companies has been improved, and individually they have developed rapidly. New exchanges have been built, many subscribers added, and the companies find that the necessity for considering means of improving operating relations is becoming very important. Although good progress has been made in overcoming the opposition of the Bell company during the past year it is expected that this will be improved upon in the future, as the Independent men become more thoroughly organized. It is important that every company should send a delegate.

SPRINGFIELD, MO., SOON TO BE EQUIPPED FOR INDEPENDENT TELEPHONE SERVICE.

UDERGROUND wires have been laid through a large portion of the business section of Springfield, Mo., by the Home Telephone Company, which some time ago was granted a franchise for an Independent telephone system. Additional conduits are being rapidly placed, so that on the completion of this work the company will have in position no less than twice the amount of underground cable which was stipulated at the time the franchise was granted.

A feature of the company's work which has gone far toward producing a feeling of satisfaction with its management is the careful manner in which this underground work has been done. It is reported that special care was given to maintaining the streets in good condition, and replacing the pavement promptly after the conduits were laid. The result has been very satisfactory not only to the people in general, but to the city officials.

NORTH DAKOTA RURAL TELEPHONE COMPANY MAKES GOOD START.

A COMPANY was organized a year and a half ago by farmers residing in Pierce and Rolette Counties, N. D., to operate an Independent telephone system. Eighty-two miles of lines have already been built, and so well is it being supported by the people of the communities in which it operates that it expects to increase the length of its lines to 200 miles before next fall. It is a co-operative company and started with but thirteen members. Its lines now furnish communication between the towns of Grano, Brazil, Rugby, Nansen, Rolette and Campbell Post Office, and in addition connect with nearly every farm house along the way giving a very satisfactory service.

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Advantages and Benefits of the Collector's Route Book

By F. V. Newman, Assistant to the General Manager, Citizens' Telephone Company

THE use of the Collector's "Route Book" by the Citizens' Telephone Company, of Grand Rapids, Mich., has enabled the company to collect 70 per cent. of its quarterly rental and toll accounts during the first month of the quarter. At the close of the second month of the quarter 86 per cent. of outstanding quarterly rental and toll accounts are collected, and at the close of the quarter but 3 per cent. are left uncollected. By the use of a rapid addressing machine the 8,500 rental bills are printed, showing the subscriber's telephone number, name and address, and amount of quarterly rental due, also the letter of the collector's territory and the numbers of the routes in the territory. The printing of these bills is completed in one day by the operator of the addressing machine.

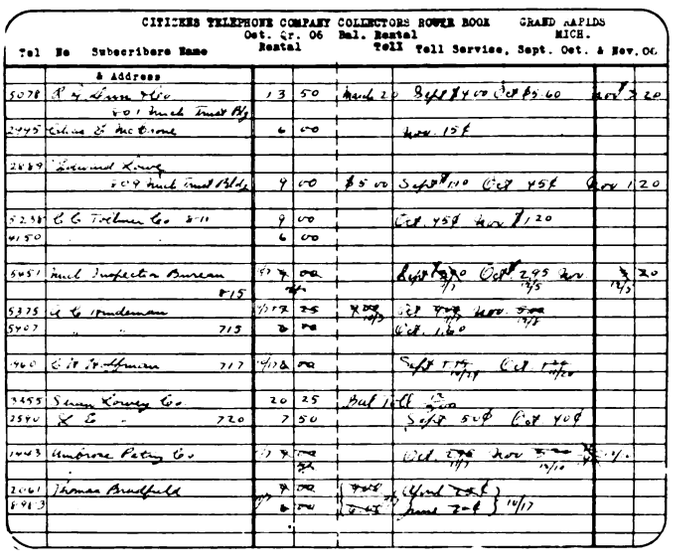

Fig. 1. Sample double-page record from collector's route book.

The city is divided into collection territories, and the territories into routes. The territories are lettered according to the territory assigned each collector, the routes according to the number of routes each collector has; that is, if the collector has territory "A" and there are several routes in this district, they will be known as routes 1, 2, 3, etc. The territory letter and route number, both of which are printed on the bills, enable the chief collector to sort the bills very rapidly. In sorting the bills he can note the territory letter and sort the bills into groups accordingly. After he has them all sorted into territories, he re-sorts the bills for each territory according to routes, and then arranges the bills for each route to correspond to the locations of the subscribers' stations. Should a subscriber owe any rental or toll account that is in arrears at the beginning of the quarter, a separate statement is made of the indebtedness and the chief collector places these statements with the corresponding bills for the new quarter's rental.

When the routing of the bills has been completed, the bills are given to the different collectors, who in turn copy them into the "Collector's Route Book" (Fig. 1). They note the subscriber's telephone number, name, amount of rental due, also the address of the subscriber. The rental for the current quarter is noted on one side of the page; if there is any balance due, the amount is noted on the opposite page. This arrangement enables the collector to note just what amount the subscriber owes. In writing these accounts in his route book, the collector occasionally skips a line or two, so that if any new subscribers are added to his territory he can enter them very near to the proper place in the route after he has noted other required information in his book.

If the subscriber is in when the collector calls, and payment is made, the collector receipts the bill and enters the amount paid in the back pages of his route book, In this entry he notes the amount paid and the date. The collector then scores out the amount in the page devoted to the regular "route" list, but does not erase the name of the subscriber. He also notes, above the amount he scores out, the date of the payment in small figures. This is done in order that, should he ever be asked on what date the subscriber paid, he may obtain the information by referring to his book.

It is customary, if payment is not made on presentation of the bill, or if the subscriber is not in, to have the collector render the bill. The object in rendering the bill is to give notice that the account is due, and if the subscriber chooses to call and make payment at the office or mail a check in settlement, which is very often done, he can do so.

If a promise is given to pay on a certain date, the collector enters the agreement upon an appointment slip. These slips are filed each night in a dated file at the collection department. When the date for payment is at hand, a memorandum is given to the collector, requesting him to call. The original appointment slip is retained by the chief collector, so that he can ascertain whether payment is made on the date promised.

After the collector has completed the work of rendering all the bills he has in his possession a complete record, according to routes of all accounts still due and unpaid in his territory. With this systematized record, a collector can call on any of his subscribers in any of the routes in his territory at any time, and have the information as to the amount due the telephone company.

The bills for long distance service for each month are routed by the chief collector in a similar manner as the rental bills. In the first month of each quarter they are presented with rental bills. The collectors copy the amount due opposite the subscribers' names in the route book, also noting the month that toll service was furnished. The daily collections received at the company's office through the mail and paid to the cashier are entered on a report by the cashier. A duplicate of the cashier's report is handed to the collection department every morning. When the collectors assemble the chief collector reads the record of payments to the collectors who have these accounts, and they score the amount of payments off their route books.

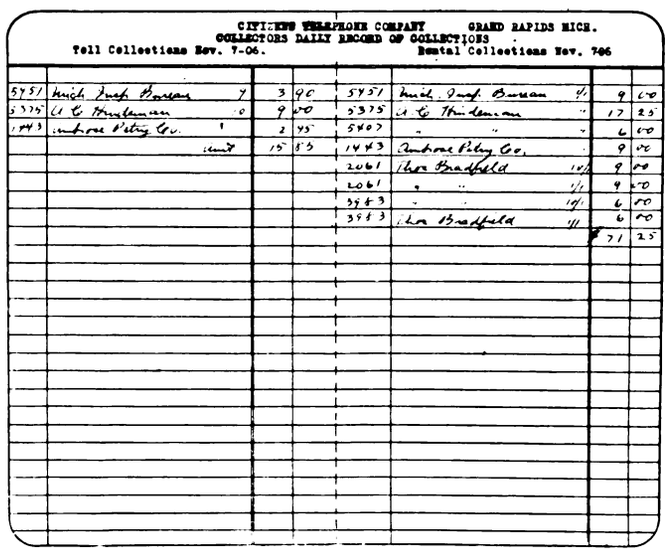

Fig. 2. Sample record of collections as placed in collector's book.

(*Continued on page* 146.)

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QUERIES

CODES FOR RURAL LINE RINGING.—(826.)

Will your readers kindly give the best method for arranging rural line calls so that directory numbers will indicate line and ring?

SINCE printing the above inquiry two weeks ago we have received a very large number of replies from managers of telephone companies in all parts of the country. Some do not fill the requirements of the original query, but will be published to give our readers an idea of the great diversity of practice in this respect, and set forth whatever merit exists in each plan.

The Jones County Telephone Company, Anamosa, Ia., is using a code which is printed on the first inside page of the directory, with instructions, as follows:

CODE OF RURAL RINGS.

· Short Ring. — Long Ring

— CENTRAL.

BROWN	GREEN
0 ··	0 ···—
1 —·	1 —···
2 ·—	2 ··—·
3 —··	3 ·—··
4 ··—	4 —··—
5 —·—	5 ·——·
6 ·—·	6 ——··
7 ——·	7 ··——
8 ·——	8 —·—·
9 ···	9 ····

General Line Ring, Six Short Rings.

Instructions to rural subscribers for ringing parties on their own line:

All numbers with the colors BROWN AND GREEN indicate rural subscribers. The last number before the color indicates the ring and the other number or numbers indicate the number of the line.

For example 212 Brown would be 2 Brown on line 21 or 212 Green would be 2 Green on line 21. 12 Brown would be 2 Brown on line 1, and 21 Green would be 1 Green on line 2.

Table 826a.

This plan, it will be observed, provides a code for a 20 party line, with a means of indicating any ring by the addition of a single figure to the line number.

Jeff Austin, manager of the Brookport Telephone Exchange, Brookport, Ill., sends an interesting plan for designation in which the only call upon an operator's or subscriber's memory is due to the use of a few code letters, the significance of which is soon learned.

The total number of rings is indicated by the last figure of the number appearing in the directory. All signals associated with code letters B, A, and M are made up of one long ring and a number of short rings. The relative position of the long ring is indicated by the letter used. Thus B means that the first ring is long; A, last ring long; M, long ring in the middle. The letter S denotes a signal with all rings long. A single long ring is reserved for a signal to call the operator. A sample code for twelve parties on line 8 would be indicated as follows, using the conventional long and short dashes to represent rings:

82 B —·	83 B —··	84 B —··	85 B —····
82 A ·—	83 A ··—	84 A ···—	
82 S ——	83 S ———	84 S ————	
	83 M ·—·		85 M ··—·

Table 826b.

An interesting code, for which the advantage of easy memorization is claimed, had been devised by A. E. Coe, manager of the Central Square Telephone Exchange, Central Square, N. Y. Following the line number in the directory list is a two-figure numeral which indicates the ring. The code may be represented as follows:

01 —·	06 ·——	11 —·—	16 ·—··
02 ·—	07 ——·	12 —·—·	17 ··—·
03 —··	08 ··——	13 —···	18 —·——
04 ··—	09 ——··	14 ···—	19 ——·—
05 ——	10 ———	15 ···	20 ··

General Ring to call all parties ——— ——

Table 826c.

On hearing any number the operator mentally cuts off the two right-hand figures, plugs into the jack designated by the remaining left-hand figures, and rings according to the code. By printing the line and ring numerals in different styles of type the subscribers may be led to give the number in such a way as to separate the party call—as **12**15 will be pronounced twelve-fifteen.

In the code it should be noticed that the calls have a certain relation to each other, odd and even numbers reversing, and that the odd numbers in the first ten calls begin with the long ring.

S. C. Snow, manager of the Blakesburg Telephone and Telegraph Company, Blakesburg, Ia., tells of his experience with a letter code, and the substiute which was devised, as follows:

"We tried lettering our lines, A, B, C, and so on, but found it to be a failure, as B, C, D and E sound so much alike, when heard through the receiver, that people would frequently get the wrong connection.

"We now write them thus in our directory: 5-2211, 9-212, 99-2121. The number 1 is a short ring, and the number 2 is a long ring, and the first number names the line, so the above would be line 5, two long and two short; line 9, long, short, long; and line 99, long, short, long, short, respectively."

The use of combinations of the numerals 1 and 2, indicating respectively short and long rings, is also mentioned by E. B. Rodgers, manager of the Ormond Telephone Co., Ormond, Neb. A variation consists in the placing of the code number before the line number, separated from it by the letter L, as printed in the directory, the advantage claimed being, apparently, that the proper signal is fixed in the operator's mind before she plugs into the jack, thus reducing the liability to error. A number is printed as follows: 221L5. A few practical points to which Mr. Rodgers calls attention are as follows:

The use of a certain number of short rings and a like number of long rings to designate different parties on the same line is

11 ··	122 ·——	1122 ·——
12 ·—	221 ——·	1222 ·———
21 —·	211 —··	2221 ———
111 ···	1111 ····	2211 ——··
112 ··—	1112 ···—	2111 —···

Table 826d.

liable to lead to confusion. One subscriber will ring during as long a time for what he calls a "short" ring as another for a "long" ring. It is insisted that all calls shall be given by number and not by name.

The code which is actually in use on a fifteen party line is made up as shown in the accompanying table, 826*d*, the rings being indicated by dashes for the sake of comparison with other tables:

Managers having interesting material to contribute to the discussion of this subject are invited to forward it as soon as possible.

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THE EDITOR'S PAGE

SYSTEM IN COLLECTING SUBSCRIBERS' ACCOUNTS.

THE article on another page of this issue, describing the collecting system used by the Citizens Telephone Company, by its incidental mention of the extremely good showing obtained serves to draw attention to the importance of regularity in handling subscribers accounts. The arrangement of bills according to routes which are not changed from time to time, and are always covered in the same order, is probably one of the principal reasons for the satisfactory results in reducing the number of delinquent payments which have been produced. Subscribers learn to expect the collector at a time which may be determined almost exactly, even down to the hour, and are more likely to be ready to make their payments than if presented with a bill after an unsettled interim of waiting. Especially in the matter of residence telephones they are able to adjust their various payments on household accounts so that the telephone company's bill is taken up each month in its regular turn.

When payment is not made at the first call, a promise to be ready on a certain date is usually obtained, and the telephone company is still able to keep up the impression that it looks carefully and promptly after its business. As brought out in the article, this is made possible by the filing memoranda according to the dates for which the promises of payment are made. As each day comes the collector takes the corresponding promise slip and looks up that subscriber. The effect of this is shown in the percentage given for collections before the end of the month.

Other advantages to the company apparently result from what may be termed an increase in the daily efficiency of the collectors. Not only do the men themselves benefit by having such a routine, but it is evidently very easy for the officials of the company employing such a system to keep a close check on the work of its men. The collector's book system of keeping records as compared with other methods of handling collections in which a regular route is laid out, possesses the additional special feature of making it possible for men to keep more closely and permanently in touch with their work, as in handling any particular case they have in their possession records which furnish them with complete and accurate information concerning the past indebtedness and payments of the subscriber.

RURAL LINE OPERATORS AND TELEPHONE CONVENTIONS.

WHAT promises to be an exceptionally interesting feature of the coming convention of the Iowa Independent Telephone Association is the special attention which is to be given to the conditions of rural line operation. In Iowa such action is particularly desirable owing to the fact that an exceptionally large proportion of the telephone subscribers are farmers, whose instruments are connected to rural lines, many of which are operated on the mutual plan. The control of these systems is very often so divided among numerous small associations, no member of which derives a considerable pecuniary profit from his activities in telephone work, that it has been considered impracticable for the managers to keep closely in touch with the general conditions of development throughout the State.

The result has been, altogether too often, the production of the greatest confusion, affecting alike the business management of the company and the interests of its subscribers, when the growth of a system which started on a small scale has reached a point which calls for the formation of closer relations with neighboring organizations. Although eager for information the men who build the small companies, starting in without the slightest experience in buying telephone material or building lines, make errors which, in proportion to the amount of money spent, are very costly.

Methods of avoiding such errors are known to many Independent telephone men in every State and discussion at conventions gives them a chance to freely pass this knowledge on to their associates who have not had equal advantages in the way of experience. When such a discussion is carefully planned and organized by a competent group of men, who take advantage of opportunities for consultation, and arrange a program which permits a large field to be covered without waste of time the financial benefit which it is possible for representatives of the smaller companies to obtain will undoubtedly amount, in the aggregate, to a very considerable sum.

Greater familiarity with the work which is being done by their associates is likely to lead representatives of the smaller organizations to a more thorough appreciation of the need of intelligent co-operation of all companies, not only in business matters, but in questions of building and operation. The business relations of many connecting companies are open to wide improvement before the highest economy and satisfaction may be attained. Much practical work in the way of building up plans for the joint handling of traffic in a way which will be fair to all parties concerned, and aid each participating company in inspiring a confidence which will help in the upbuilding of its own business needs to be done. Every telephone man is coming to realize more and more thoroughly as time goes on that his individual plant, although free to handle its business in its own way, must be in the eyes of his subscribers who look for an efficient and far-reaching service, a unit firmly joined to the other neighboring members of a great system. Although his territory may have boundaries, there must be nothing in the service which he offers which will cause subscribers to think that their field of communication is limited. The relations which must be established before this desirable, and in fact absolutely essential, condition may be attained can be in no way so efficiently built up as through free and open discussion by large groups of men. Every effort of the officials who represent a State association looking to the promotion of such an end deserves the most active and hearty support of all members who are in a position to render their aid to the movement.

WATCHING THE LEGISLATORS.

THREE State conventions, occurring within practically as many weeks, have found it necessary to devote a large proportion of their time to the discussion of pending legislation of a nature expected to be injurious to the interests of the telephone companies. These States do not by any means represent all the places where such action is considered desirable by many telephone managers. The fact is that not merely the increase in the importance of the telephone industry and the growth in the number of people directly concerned with the telephone service, but also the widespread publicity which is being given to telephone affairs tends to make this class of business a special mark for legislative attention. In many of the measures which have been introduced there are evidences of haste, showing a lack of careful consideration of the interests of both the public and the telephone companies. Telephone managers might find it a good thing to maintain an acquaintance with their representatives, and keep carefully advised of their intentions. It is easier, and far more pleasant, than to be forced to consider such matters after the injury is proposed.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. MCMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

STRIKES AS DEFENSES AGAINST NEGLIGENCE.

A resident of the city applied to us for the installation of a telephone in his house at a time when we were suffering from a strike of our employees so that we could not establish a telephone for him. He then made a peremptory demand and at the same time offered us the necessary rental in advance. We informed him that we were unable to supply him with a telephone until the strike was settled as we had no one on hand competent and willing to put in his telephone. He is now asking that we pay him the sum of $200, which is established by the state law as a penalty for refusing to install a telephone on demand. It seems to us that the strike of our employees ought to be sufficient excuse for our inability to supply his telephone. Kindly give your opinion on this as promptly as you can. C. C. W.

WHEN a company relies on the defense that the cause of a loss or injury to any person is the act of a strike of its own employees, it must be shown that the act was the approximate cause of the loss, since if any wrongdoing of the company contributed to the act or acts alleged, it is presumed to be the real cause of the inquiry; and the burden of proof is thrown upon the company to show that the real cause of the loss was the strike. We know of no decided case which applies this law to the attempted collection of a penalty established in such statutes as the one you mention, but suppose the same rule would apply, and that the strike would be a sufficient defense in any action. It would be necessary for the company to prove that it had used its best efforts to obtain workmen in place of those on strike, and possibly also to show that it had not caused the strike, although it might be successfully contended that the cause of the strike was immaterial. Jones on Telegraph & Telephone Companies, Section 365.

COMPROMISE AGREEMENT WITH INDEMNITY COMPANY HELD CONCLUSIVE.

THE Cumberland Telephone and Telegraph Company brought suit against the Frankfort American Insurance Company to recover $5,000 on indemnity security and $7,500 for alleged damages. The indemnity company claimed that the telephone company was indebted to it for having failed to give a proper amount for expenditures for the operation and maintenance of its lines, and asked a judgment for the amount when ascertained. The indemnity company insisted that it had been misled and that the telephone company had withheld information that should have been given. The compromise agreement was reached by the telephone company and the agent of the insurance company, which, the telephone company insisted was a final settlement of the matter involved. The lower court rendered a decree in favor of the telephone company for $5,000 which the Court of Chancery Appeals affirmed; the decision held the compromise conclusive, and found that no withholding of material facts or other evidence of fraud.

CONSTRUCTION OF RIGHT OF WAY CONTRACT.

THE American Telephone and Telegraph Company was sued in Sullivan county, New York, by Roderick Morrison, who owned a valuable tract of land, containing about 3,100 acres. He charged the company with cutting timber from a strip the length of the entire tract, and of an average width of twenty-four feet, and setting its poles along the route thus opened. The company claimed the right to occupy the land by reason of a written instrument, which, in consideration of five dollars paid to the plaintiff, granted the company the right to construct its lines "over and along" the property in question, "including the necessary poles and fixtures along the roads, streets and highways adjoining the property . . . said sums being received . . . in full satisfaction for the trimming of any trees along said lines . . . and the right to cut down trees to clear line." The court held that this grant limited the company's rights to the construction and maintenance of the line along two public highways, which extended through the tract of land and not across the land. The damages which the plaintiff was entitled to recover were for the diminution in value based upon the cutting of the timber, or making of the roadway, and the maintenance of the line to the commencement of suit. Since action for future trespass might be maintained it was held improper to allow damages for the entire value of the land taken and all damages that might accrue upon the assumption that the company's trespass would be permanent. Morrison vs. American Telep. & Teleg. Co., 101 N. Y. S., 140.

IMPERSONATING ANOTHER PARTY OVER THE WIRE.

What, if any, is the recourse to a person impersonating another party over the wire in Ohio? H. R. S.

THE recourse against a person for impersonating another on the telephone depends entirely on what was done by the one assuming the impersonation. There is no penalty for the act itself, irrespective of its consequences, but if the impersonator secured money or property by his act he would be liable criminally for obtaining money under false pretenses, and if he causes damages to another he would be liable civilly for his damages. We cannot answer the question definitely without knowing the circumstances more fully.

ORDINANCE TO BE A CONTRACT MUST BE ACTED UPON.

THE New York Electric Lines Company applied for a mandamus against William B. Ellison to compel him, as commissioner of water supply, gas and electricity of the City of New York, to grant it a permit to make excavations in certain streets. In 1883 the Board of Aldermen passed a resolution granting permission to the company to lay wires in and through the streets of the city. Under this authority the company applied to the commissioner of public works for a permit to make excavations, but this permission was refused and the company then brought a suit for mandamus, which was denied because it had not secured the approval of the Board of Electric Control to its plans. Nothing further was done by the company until December, 1905, when it made another formal application for a permit to the commissioner of water supplies. The company again brought suit for a mandamus. One of the contentions of the company in this second suit was that it had a contract with the City of New York and that certain action by the legislature granting to the Board of Electrical Control the power to approve plans for subways impaired the obligation of its contract with the city. The court held that to constitute a contract between the city and the company something more was needed than the mere granting to the company of the permission to use the streets. The company had not agreed to construct the subways or entered into any obligation whatever. The court therefore held that there was no consideration and hence no contract, the obligation of which could be impaired. People vs. Ellison, 101 N. Y. S., 55.

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IN THE OPERATING FIELD

ADVANTAGES AND BENEFITS OF THE COLLECTOR'S ROUTE BOOK.

(*Continued from page 142.*)

When a subscriber moves from one collector's territory a notification is sent to the collection department by the contract department. It is the duty of the collector from whose territory the subscriber moves to note the amount due on the removal order and pass it over to the collector in whose territory the subscriber has newly located. At the same time the collector makes a notation opposite the name in his route book to the effect that the subscriber has moved, and he has handed the account over to another collector for collection.

When a collector receives a notation of a discontinuance for a subscriber in his territory, he scores the amount due off his route book and awaits a corrected bill. During the quarter at a convenient time, after business hours, there is a comparison between the lease ledgers and the collectors' route books. The collectors assemble in the collection department, and the chief collector reads the telephone numbers and names of subscribers who owe accounts. The collector who collects of this subscriber reads the amount that shows due on his route book. If the amounts due agree with the lease book, they are checked with a blue pencil, which shows when the comparison is finished that the amount of the account due is correct. If there is any discrepancy it is settled immediately, so that the collector continually has a correct record.

The object of dividing the city into territories and routes is to enable each collector to learn the locations and financial conditions of the subscribers in his territory.

DELAWARE, O., GIVES GOOD SUPPORT TO INDEPENDENT TELEPHONE COMPANY.

THE Citizens' Telephone Company in Delaware, Ohio, which was organized in 1898, has just issued a report which shows that during 1906 it made the greatest growth in its existence. Four hundred and thirty-five new telephones were added to its system, making the total number in use in the city thirteen hundred and forty; while those on lines extending into the surrounding country bring its aggregate number of instruments up to twenty-one hundred and three. The report shows that the company's business is in an exceedingly satisfactory condition. Directors were elected as follows: C. D. Young, W. G. Hormell, W. Guy Jones, J. O. Gooding, W. M. Heseltine, J. L. Anderson, W. B. Hedges, A. J. Pounds, Geo. H. Carter.

INDEPENDENT COMPANY GAINS DECISION WHICH WILL AUTHORIZE ENTRANCE INTO NASHVILLE.

ONE of the hardest battles ever fought by an Independent telephone company ended in victory at Nashville, Tenn., on February 23, when the State Court of Appeals decided the case of the Home Telephone Company vs. the Mayor and City Council of Nashville, giving the company a sweeping verdict. For over two years the Home Telephone Company, a corporation owned practically by the same interests that are now building a toll line from Louisville to New Orleans, has been endeavoring to get into Nashville, but has been outdone at every turn by the Cumberland Telephone and Telegraph Company, the Bell system operating in Kentucky, Tennessee, Mississippi and Louisiana. The history of the fight is a long and interesting one and shows many of the tricks to which the Bell interests resort to carry their ends. The latest move, and the one that brought about the suit which the Court of Appeals has just decided in favor of the company, was a proposition from the Cumberland company to pay the city a franchise tax of $10,000 per year so long as no other company was allowed to do business in that city. The city agreed to this contract, but the Home Telephone Company continued putting its poles in the streets and preparing to put in an exchange. Thereupon the city threatened to cut the poles down if the work was not stopped. The Home company asked for an injunction against this proceeding and secured a temporary injunction in the lower court which was dissolved by the Chancery Court. On appeal to the higher court, however, the injunction was granted and an opinion given that the company had all rights upon the streets of the city under the statutes of 1875, and that the city's contract with the Cumberland company was an unlawful one.

When the Home company first began working to get into Nashville the City Council denied a franchise. The company then endeavored to get the Council to submit the matter to a vote of the people, but this was also denied. On this proposition was a contract on the part of the Home company to put all its wires in a conduit and that the conduit would be made sufficiently large to make room for all other wire-using companies. The Cumberland company, fearing that this would induce the City Council to grant a franchise, made a counter proposition, and agreed to construct a conduit system as a part of its contract to pay the city $10,000 per year for exclusive rights. Being unable to deal with the City Council in any fashion, the Home company began work relying on the act of 1875, which gave all public utility companies rights over the streets and alleys of all cities and public roads of the State, and it was under this act it proposed to operate without a city charter. It was here that the city threatened to cut the poles and stopped the work.

In its bill the company set out the contract made between the city and the Cumberland Telephone and Telegraph Company, by which the latter was to pay $10,000 per annum for the exclusive right to operate a telephone system, and alleged that it was contrary to public policy and tended to create a monopoly. Upon this point the court found with the complainants, saying such a contract was contrary to public policy, and therefore void.

The act of 1875, said the court, was a general law, authorizing and specifying the manner of the organization of public service corporations. It made distinctions between local corporations and general corporations, giving them separate powers. A street car company was local and must depend upon the consent of the city in which it operated for the privilege of operating. So also with any purely local company that only affected a community of a county. With corporations of general character, which served all of the people of the State, or perhaps several States, the power of saying where they should operate and how was vested in the State and not in the city, but even the General Assembly had no authority to exclude one company and permit others to enter.

The entire dependence of the city was placed in a clause in the amended charter of 1899, which provided for popular elections before the authorities should grant a franchise. The court on this point declared that a city charter could not abrogate a general law—the city had no right to grant a franchise of any sort without the sanction of a general law. A bond issue could not be made simply because the people voted to make it, but it must be authorized. While municipalities were granted certain rights and given certain powers, they could not be delegated with an authority when it was questionable as to whether the General Assembly possessed such authority. It was certainly not possible for a city ordinance to abrogate a general law.

The city had the right of police regulation, of taxation, could prevent the company from obstructing the streets or interfering with the inalienable rights of the citizens, but it certainly had no authority to exclude the telephone company from the streets.

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This decision settles the controversies between companies in Tennessee and it may contain many valuable pointers to companies in other States that have not gone as far into the legal question as this case has gone. It was a bitter sermon to the Cumberland company, for the case at stake was in the very home of the Cumberland company, where its commercial power political authority and all other forms of influence were at hand.

INTERESTING FEATURES OF ANNUAL REPORT OF TOLEDO INDEPENDENT COMPANY.

ON December 31st, 1906, as shown by the anual report of President Jas. S. Brailey, Jr., the Toledo Home Telephone Company had installed and connected with its telephone system in Toledo 11,877 telephones, an increase for the year of 2,021 telephones. On the same date it had installed and connected 104 private branch exchanges and inter-communicating systems, with 2,194 sub-stations, an increase for the year of 33 private branch exchange and inter-communicating systems and 961 sub-stations. Service tests made by stop watches through subscribers' stations show that the average time in which operators answer calls is 3 2-5 seconds.

January 1, 1903, after six months operation, the company had 5,600 telephones in service, and handled 65,000 calls per day—or at the rate of 23,000,000 calls per annum. January 1, 1907, it had in service 11,877 telephones, and handled 225,000 calls per day—or at the rate of 81,000,000 calls per annum.

As compared with January 1, 1903, the cost of service to subscribers has been reduced 50 per cent. At the same time the facilities for use of telephones have increased 100 per cent. That is, the number of telephones with which each subscriber can connect has been more than doubled, while the cost per call to the subscriber has been reduced one-half.

Gross earnings for 1906 were $64,813.64 in excess of those of 1905, while operating expenses increased by $23,740.92.

MEXICAN INDEPENDENT SYSTEM NEARLY COMPLETE.

THE underground work of the New Telephone Company, which is building a large telephone system in the City of Mexico to operate in competition with the Bell company, is nearly complete. The conduits are already laid, and many of the cables at the present time are being pulled in. At the company's headquarters a force of girls has already been engaged, and they are being given instructions to fit them for their duties as operators. The candidates have been selected very carefully, and it is expected that the Independent company will offer a most excellent service. The entire plant is reported to be laid out and constructed in a very thorough manner in spite of the numerous and peculiar obstacles which have been met.

MERGER OF NEW YORK INDEPENDENT INTERESTS WITH BELL COMPANY ENJOINED.

NEWSPAPERS in many sections of the country have for some time past contained rumors of negotiations which were said to be going on in the interests of the Bell company with the object of obtaining control of the United States Independent Telephone of Rochester, N. Y. Although little authentic information was given to the public, the latest step in the case is the announcement of an injunction obtained by Attorney-General William S. Jackson of this State, ordering the restriction of such a merger on the ground that it would create a monopoly in the telephone business in a portion of the State. The information on which this order is based was presented by Jas. B. Hoge, of Cleveland, president of the International Independent Telephone Association of America, and other representatives of Independent telephone companies.

The question is to be further considered at a hearing which has been set for March 7th to give time for the preparation of arguments.

INDEPENDENT SERVICE SHOWN AT PUBLIC EXHIBITION IN PROVIDENCE, R. I.

THE Food Fair recently held at Providence, R. I., gave the Home Telephone Company, which is applying for a franchise in that city, a new opportunity to present a convincing argument concerning the value of the service it proposes to give. Two booths were opened and attractively decorated, and within them were placed a switchboard and an exceptionally fine display of telephone apparatus of the type which is to be used by the company. Telephones were installed in various parts of the hall and connections made as required. The public in general and the local newspapers offered some very interesting comments on the display. It seemed to be the general opinion that the instruments were considerably superior to the types furnished by the Bell company, owing to the fact that they are smaller and much neater in appearance. The use of the Shield in prominent locations in connection with this exhibition was an especially interesting feature.

THE SLEET AND SNOW PRIZE STORY CONTEST

HAS ONLY A FEW WEEKS MORE TO RUN

IF you have taken your photographs they should be sent in as early as possible, with a thorough statement of facts. Read the conditions carefully as published in early issues of the year. Do not think they are too difficult. All that is required is a simple statement, but let it be as complete as possible. If you have not yet had an opportunity to take photographs, be on the watch for a sleet storm. Do not let this chance slip—all good material will be paid for in any event—and someone will get the $20 PRIZE. IT'S WORTH TRYING FOR.

KENTUCKY CITY COUNCIL DECLARES BELL COMPANY A NUISANCE.

IT is reported from Hopkinsville, Ky., that on February 15th the city council instructed the city attorney to prepare an ordinance declaring the Cumberland Telephone & Telegraph Company a nuisance in Hopkinsville. The reason for this action is that the franchise of the Bell company expired in 1902, and since that time it has continued to operate without having purchased a franchise. The citizens of the city are said to be thoroughly dissatisfied with the service rendered by the company, and with the treatment accorded its patrons and others in the city in many ways. It is generally believed that it will be for the advantage of telephone users to have the company's service completely discontinued. In the event of the passage of the ordinance which is to be submitted by the city attorney the Bell company will be obliged to pay a fine for every day which it continues to operate without a franchise.

BERLIN VI.—A 24,000-LINE EXCHANGE.

(*Continued from page 138.*)

50-pr. cables rising in a pit toward the main distributing frame.

From the main distributing frame the conductors, as may be seen from the illustration, rise in 21 pair interior cables toward the intermediate hall proper, where they are taken to the jack panels of the intermediary switchboards and then through all the rows of panels and to the intermediate distributing frame for distribution to the answering jacks and relays, connections being made between opposite sides of the frame by short wires.

The installation of this change was under the direction of Messrs. Siemens & Halske.

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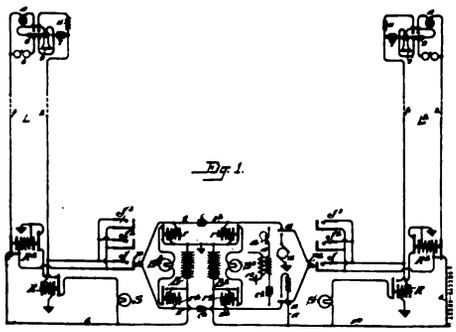
TELEPHONE PATENTS

TELEPHONE SYSTEM.

William W. Dean, Chicago, Ill., patents (No. 841,223; dated January 15, 1907; filed January 23, 1905; serial No. 190,311) and assigns to the Kellogg Switchboard & Supply Company, Chicago, Ill., a telephone system.

This patent covers an arrangement of line and cut off relays in connection with suitable cord circuit. Cut off relay R^2 is permanently connected to the sleeve of the jack, and line relay R is connected to the tip. When a subscriber takes off his telephone the line relay is operated by current flowing from battery B through conductors 5, 4, etc., and back through the winding of the relay. The insertion of the operator's plug closes a circuit



to ground through cut-off relay R^2. The operation of this relay disconnects the signaling circuit which was completed through the armature of the line relay, and connects the sleeve of the jack to conductor 3 of the subscriber's line.

AUTOMATIC SYSTEM OF INTERCOMMUNICATION.

Anthony Van Wagenen, Sioux City, Ia., patents (No. 836,904; dated November 27, 1906; filed July 31, 1902; renewed March 3, 1906; serial No. 304,051) an automatic system of intercommunication.

This patent covers an arrangement of circuits for a common battery automatic telephone exchange. The inventor states that this system is adapted to the use of a calling transmitter at the subscriber's station and selective switches at the central office, of a type covered in previous patents. Means are provided for preventing the calling transmitter from operating the central station switches designed to be controlled from another line. When a subscriber has obtained connection with the desired line, through a proper manipulation of his signal transmitting mechanism, he calls the second subscriber by using the generator at his station.

TRUNKING SYSTEM.

Harry G. Webster, Chicago, Ill., patents (No. 843,245; dated Feb. 5, 1907; filed Dec. 8, 1902; serial No. 134,263) and assigns to Kellogg Switchboard & Supply Co., Chicago, Ill., a trunking circuit.

This patent covers a circuit for trunking from a toll to a subscribers' board, which has the following operating features: When the toll operator plugs into the jack connected with this trunk she closes a battery circuit in the trunk line through her clearing out drop, operating a relay to light the calling-lamp as well as the pilot lamp at the trunk position. The trunk operator connects her receiver with the line and receives the order, testing the desired line, and if she finds it idle inserts the plug. This act causes to be extinguished the calling lamp and also operates a relay which causes the illumination of a ringing lamp. Another result is the closing of a relay in the sleeve circuit which normally keeps the tip of the plug disconnected from the trunk line and connected to a testing circuit. When this sleeve relay is operated, upon the insertion of the plug, the test relay is disconnected and the tip circuit closed for conversation.

Battery is supplied to the subscriber at this end of the trunk through the windings of a repeating coil leaving the line to the toll board neutral. When the subscriber hangs up his receiver the battery is connected with the metallic circuit of the trunk throwing down the clearing out drop in the toll cord circuit at the distant switchboard. This operator withdraws her plug and causes a disconnect signal to be given at the trunk position.

SELECTIVE PARTY LINE SYSTEM.

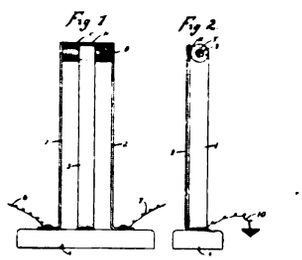
Frank J. Mersman and Joseph Mersman, Ottawa, O., patent (No. 841,033; dated January 8, 1907; filed April 14, 1906; serial No. 311,734) a telephone exchange system.

The object of this invention is the production of a selective party line system, wherein an operator may have entire control of the apparatus at any one of a number of stations on the same line. The arrangement described is for a metallic circuit line, over one side of which any one of the subscribers can signal by a magneto generator the central office, throwing a grounded drop. The other side is broken at each station, and an arrangement of relays inserted whereby a succession of impulses from the central office may cause the line to be completed to the desired station, all other instruments being cut out.

PROTECTOR.

Frank B. Cook, Chicago, Ill., patents (No. 841,849, dated January 22, 1907; filed April 16, 1906; serial No. 311,991) a protector.

In Fig. 1 is shown a side elevation of this protective device, while Fig. 2 shows an end elevation with the forward supporting spring removed. The spring members 1, 2, which with No. 3 are mounted upon a suitable base 4, support a heating



element 5, which is made of conducting material, and included in the line circuit. For convenience in mounting the heating element 5 is provided with recesses 8 at its ends, adapted to fit the projections 9 on the supporting springs; or it may be fitted with caps soldered in position and adapted to engage suitably formed ends of the supporting springs.

The element 5 is preferably made of a piece of graphite, and it is so firmly held between springs 1, 2 that a good electrical connection is assured. When the current in the line rises to an unusual value, and is so maintained for a sufficient time, the temperature of the graphite rises and heats the insulating material 11, causing it to melt. The spring 3 is normally under tension, and when the material 11 is melted forces itself against the conductor 5, thus establishing an electrical contact which allows the whole or a portion of the dangerous current to be diverted to ground 10.

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THE DEADLY PARALLEL

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With GRAY PAY STATIONS you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

GRAY TEL. PAY STATION CO.

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FOR SALE—1,000 Kellogg magneto telephones; Viaduct Mfg. Co. ringers; Wabash Cabinet Company's back boards and battery boxes. Good condition, almost new. Will sell singly or in lots. For particulars, write Kinloch Telephone Company, C. W. Shands, Purchasing Agent, St. Louis, Missouri. 755

FOR SALE CHEAP—100 series telephones with Ericsson transmitters and Holtzer-Cabot generators. Good as new. Address R. Valentine, Pres., Independent Telephone Ass'n of Wisconsin, Jamesville, Wis. 783

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WANTED—A man with three years' experience as switchboard installer and four years as Superintendent of Construction, wants a position as Manager or wire chief of a common battery plant. At present employed as installer but is married and desires a local position. West or northwest preferred. Address Box 774, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 774

WANTED—A telephone manufacturing engineer and manager, to take charge and promote a small concern. A thoroughly capable man is required. Address, Box 777, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 777

WANTED---Continued

WANTED—Position by married man of 26 as manager of common battery exchange in a town of about 5,000 or more. Have built and managed complete exchanges. Salary reasonable. Address Box 778, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 778

WANTED—Position by first class all-around telephone man with twelve years' experience. Small Independent company operating rural lines preferred. Married, temperate and trustworthy. Will go anywhere. Address Box 784, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 784

WANTED—First class wire chief for common battery plant, New York State. None but first class man need apply. Address, stating experience and references, Box 785, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 785

WANTED—Married man with five years' experience desires position as manager or troubleman. Three years with present company. A-1 references. Open March 1. Address Box 772, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 772

POSITION WANTED—An expert mechanic and designer wishes to make a change. Eighteen years' experience in the instrument and telephone lines. Technical training. Telephone engineering, Scranton School. Got the habit of "delivering the goods." Address Box 773, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 773

POSITION wanted by all around telephone man as troubleman on line, instrument, switchboard. Also capable of managing an exchange. Good references. Address Box 786, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 786

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Form G-90-B. For City Exchanges having many Rural Lines.
Form G-90-C. For City Exchanges, Rentals and Toll Charges separated.
Form G-90-E. For Small Exchanges, Rentals only.
Form G-90-F. For Small Exchanges, Tolls only.
Form G-90-G. One subscriber to a sheet; carries account 4 years.
Form G-90-H. One subscriber to a sheet; carries account 12 years.
Form G-90-I. For Small Exchanges; Bound Books; carry 12 subscribers on a page for 1 year.

THE Edwards-Hine Co.

TELEPHONE SYSTEMATIZING DEPT.

5 and 7 PEARL STREET (EAST), GRAND RAPIDS, MICH., U. S. A.

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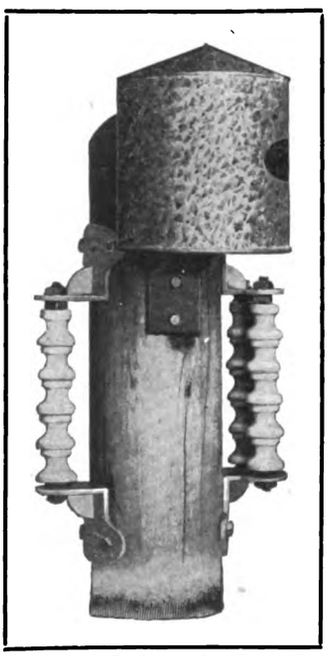
IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

A FACTOR IN MODERN WIRE DISTRIBUTION.

OVERHEAD telephone wires are fast disappearing in many cities and towns, being replaced by underground or aerial cables leading directly to a distributing point. The Robinson Distribution Rack (patented), manufactured by the W. G. Nagel Electric Company, Toledo, O., is recognized as one of the most valuable appliances used in this class of work. The advantages of this rack, which is illustrated upon this page as used in connection with a can top terminal, are said to be numerous, including that of low cost, the fact that there is no waste of insulation, and the great flexibility to which the system lends itself. For instance, if there are fifteen pairs of wires to be distributed, and five are to go from one side of the pole and ten from the opposite side, all that is necessary is to locate the respective racks to correspond to the wires. The advantages of this plan are apparent even after the wires are in place, as it is very easy to trace circuits in looking for trouble.

The insulators used on this rack have a special drip feature, which prevents leakage between pairs. Malleable iron is used in the construction of the supports, and the metal work is all galvanized. Since the introduction of this apparatus numerous improvements have been made, the nature of which will be evident from an examination of some exceptionally interesting descriptive matter which may be obtained on application to the company.



Robinson Rack and Can Top Terminal.

THE NATIONAL CONDUIT & CABLE COMPANY, 41 Park Row, New York City, has issued under date of February 20th an interesting number of its folder entitled "Copper Gossip." This contains statements as to the general business outlook, and reference is made to the copper market situation, the London market and copper mining news. Quotations of New York and London prices for the last two weeks in January and the first three in February compared with similar dates of last year are given, as well as statistics covering exports and imports and European supplies.

THE LONG DISTANCE TELEPHONE MFG. CO., South Bend, Indiana, is now mailing its new general catalog, 1907 edition, to all who desire a copy. This catalog is a very fine edition, both from the standpoint of engineering description and on account of its pleasing appearance. The cover is of handsome blue Westminster paper, printed in three colors. In addition to the two hundred handsome half-tone illustrations, a full and comprehensive description of each and every part manufactured by the company is given.

To those who contemplate entering the telephone field or for those who are looking for new equipment this catalog is especially useful as it gives a complete engineering description and illustration of all the different parts of the instrument. It is the last of a series of six publications issued during the last six months, and is the culmination of a successful sales campaign carried on under the direct and personal supervision of Mr. S. A. Duvall, vice president of the company.

THE BELDEN MANUFACTURING COMPANY, 194 Michigan street, Chicago, Ill., has recently purchased a building comprising five stories and basement adjoining its present factory. The new building has been altered in such a way as to form an addition to the present manufacturing floor space of about fifty per cent. This increase has been made necessary by the demands in all departments of the company's business, which includes the manufacture of copper and German silver for various purposes, in addition to the well known Belden specialties for telephone companies.

JULIUS ANDRAE & SONS CO., Milwaukee, Wis., reports a rapidly increasing market for the new type of condenser which is designed to be attached to telephones already in service. The condenser itself is a very neat and attractive piece of apparatus, being enclosed in a handsomely enamelled iron case, and equipped with cords and binding posts. The cords are connected up in place of the receiver cords in the telephone, and the receiver cords in turn connected to the binding posts on the condenser. This is very easily accomplished without opening the telephone cabinet at all, and does not necessitate re-soldering joints or re-wiring.

The Andrae people state that they have now placed these condensers in almost every State in the Union, and that they have given excellent satisfaction.

THE DEAN ELECTRIC COMPANY, Elyria, O., has just issued in its folder No. 6 much interesting material relating to its Express type switchboards. The drops and jacks are fully described and well illustrated, and facts concerning ringing and listening keys, operators' sets, lightning arresters, cabinets, etc., used for this type of switchboard are given. The Dean harmonic selective ringing party line equipment to be used with this type of board will give the highest grade of selective service. The company will be pleased to send this folder to all interested persons.

THE SUMTER TELEPHONE MFG. COMPANY, Sumter, S. C., has embodied some very ingenious points in its standard sub-station sets. The high grade attained by this company in the manufacture of its parts, such as transmitters, ringers, receivers, etc., is well known, and the same standard is set in the woodwork of the instrument cabinets, and in the arrangement of parts. Telephone men who are anxious to obtain information on the essential points about these instruments which give them long life and reduce maintenance expenses should write to the company for information.

FIRE AT FACTORY OF WIRE AND TELEPHONE COMPANY OF AMERICA WILL NOT AFFECT DELIVERIES.

THE fire which destroyed one of the factory buildings of The Wire & Telephone Company of America, at Rome, N. Y., on February 23d, will in no way interfere with the company's ability to take care of the requirements of its trade as heretofore. Owing to the resourcefulness and prompt action of the officers every provision has been made to make deliveries and to accept new business on all of the company's products.

The fire, which destroyed only the wire-drawing plant, was no sooner under control than arrangements were being made for the drawing of wire by other mills to fill orders. Representa-

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Standard Vitrified Conduit Company

B. S. BARNARD, President.

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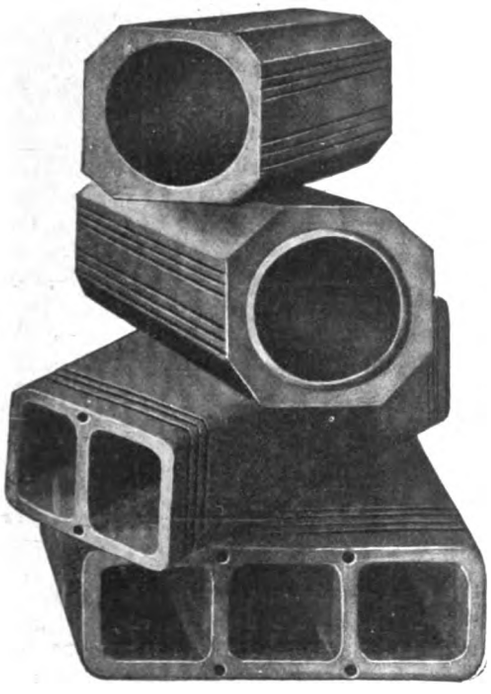
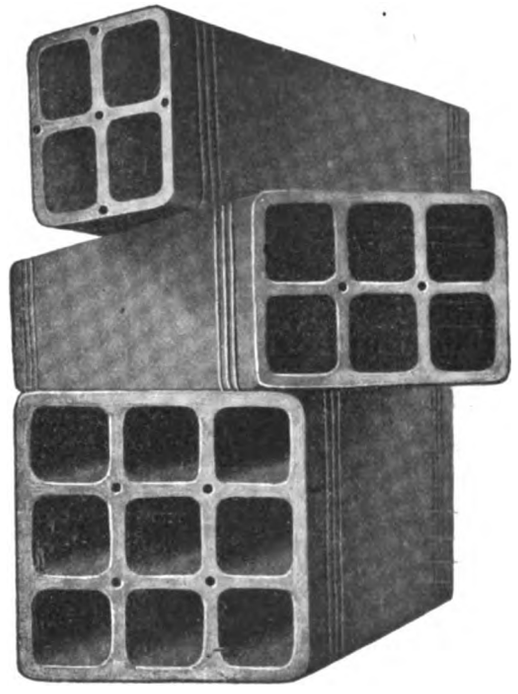
ANNUAL CAPACITY, 40,000,000 FEET OF CONDUIT



SINGLE DUCT
3¼ inch Round Bore
3½ " " "
4 " " "
3½ " Square "
3¼ " Round "
(Socket Joint)

MULTIPLE DUCT
2, 3, 4, 6 and 9 Duct
3¼ inch Square Bore
3½ " " "

MULTIPLE DUCT
2, 3, 4 or 6 Duct
3¼ inch Round Bore



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Niagara Falls Power Co.
Charles E. Phelps, Jr., Baltimore, Md.
New York Edison Co.
Brooklyn Edison Co.
Philadelphia Electric Co.
Norfolk Railway & Light Co.
Montreal Light, Heat & Power Co.
Bell Telephone Co., U. S. A.
Bell Telephone Co., Canada
Pennsylvania R. R. Tunnel, N. Y. City
Trolley Tunnels, N. Y. City
Rapid Transit Subway, N. Y. City

ANNUAL CAPACITY:

40,000,000 Duct Feet

WRITE FOR CATALOGUE

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tives were instructed to accept orders and assure customers of deliveries as though there had been no such misfortune as a fire loss. Buildings in which magnet wire, rubber-covered wire and telephone products are manufactured were not damaged in the least, and operations have been resumed. The Wire & Telephone Company of America has already made contracts for the erection of a new wire drawing plant, which will be pushed to the earliest possible completion, and will have a greatly increased capacity.

NEW YORK FIRM DOES MAIL ORDER BUSINESS IN TELEPHONE BLUE PRINTING.

VERY frequently it happens that a telephone company has need for from one to a couple of hundred blue prints from certain drawings or tracings. As the usual run of such work in each organization would not warrant the outlay for the necessary apparatus to do the work themselves, the H. B. CHRISTENSEN COMPANY, 33 Murray street, New York, has arranged to give special attention to the requirements of both operating and manufacturing companies engaged in telephone work. This company has exceptional facilities for turning out very high grade work, at low prices, and at short notice. As a general rule, the completed blue prints can be shipped the same day an order is received. Telephone companies planning new outside construction, either aerial or underground, securing rights of way for new leads, furnishing special instructions to outside foremen, inspectors and troublemen, etc., will find it to their advantage to correspond with the above company, and also manufacturing companies that have special work of this class to be completed at short notice.

The Christensen company can supply either the conventional blue print on linen or on paper, or a special black print on buff paper or linen. It is also the exclusive selling agent in this country for a special tracing paper of a light green tint, giving excellent results and selling at a price far below that of standard tracing paper.

THE STERLING ELECTRIC COMPANY, Lafayette, Ind., has an especially interesting piece of equipment in its "Army type" switchboard. The cabinet appears to be of a neat design and thoroughly well made, and is so put together as to facilitate the easy insertion or removal of apparatus. All apparatus is readily accessible for adjustment or repairs. Equipment may be readily installed at any time, the plan recommended being to buy a cabinet with an initial equipment sufficient to slightly more than cover the number of lines in use; then buy additional jacks, drops, etc., as required.

THE BLAKE SIGNAL & MANUFACTURING COMPANY, 246 Summer street, Boston, Mass., has in the "Blake Tube Flux," which under its new name has been recently put upon the market in an improved form, an especially interesting product. The flux is put up in a collapsible tube with a long aluminum spout. By the manipulation of the tube just the proper quantity of paste can be applied to the work during the process of soldering, and the spout enables it to be placed just where it isneeded. Owing to the fact that this spout is made of aluminum it can be placed directly in hot solder without becoming clogged. Full information will be furnished by the company on receipt of a request.

THE HALLETT IRON WORKS, 92-96 W. Polk street, Chicago, Ill., is making large sales of its standard materials for outside construction. Cable reel jacks and bars, alley arm braces and other classes of iron work used in telephone construction which this company sells have become thoroughly established in the market and won a high reputation for quality. A complete list of the company's products with any desired information will be sent to telephone managers upon request.

THE STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY, Rochester, N. Y., reports contracts closed for switchboards since February 1st as follows:

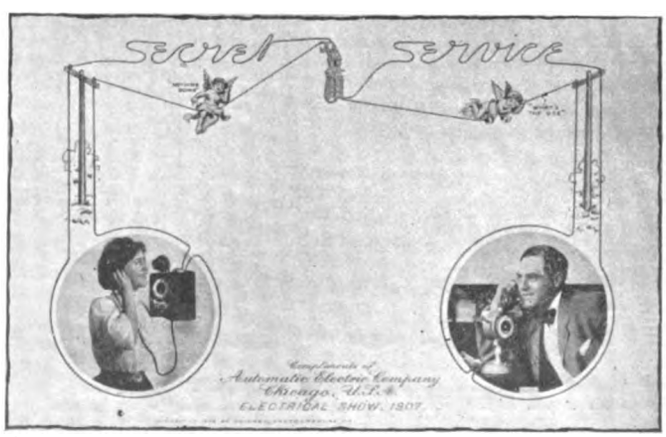
Central Energy Multiple Switchboards: One 6-position multiple switchboard, 2400 ultimate, 500 equipped, Mart, Texas. *Central Energy Private Branch Exchange Switchboards*: Rome, N. Y.; Rockford, Ill.; Waco, Tex., 2; Rochester, N. Y.; Louisville, Ky.; Minneapolis, Minn., 10; Lincoln, Neb.; Toledo, Ohio; St. Petersburg, Fla.; Port Jefferson, N. Y.; St. Anthony, Idaho. *Generator Call Switchboards*: Marion, Ill.; Carrington, Mo.; Bloomington, Ill.; Aviston, Ill.; Tonopah, Nevada; Somers, Ia.; Byron, Ill.; Odelbolt, Ia.; Fairview, Nevada, 2; Garrett, Pa.; Salisbury, Pa.; South Whitley, Ind.; Glouster, Ohio; Irvington, Ky.; Norway, Ia.; Lewistown, Mont.; Aurora, Neb. *Machine and Power Equipments*: Fairmont, Neb.; Geneva, Neb.; Rome, N. Y.; Toronto, Can., 2; Rochester, N. Y., 2; Nacogdoches, Tex.; Birmingham, Ala.; Olathe, Kans.; Port Jefferson, N. Y., 2.

Telephone orders have been received in good numbers. One order of fifteen hundred telephones was recived last week wjth others and sales are said to be increasing daily.

THE AMERICAN CONDUIT COMPANY, New York City, has just issued a leaflet which gives some interesting information concerning concrete. It shows the amount of material required for a cubic yard of concrete made with different proportions of sand, loose gravel and cement. This table should be very useful to those who have occasion to compute volumes of this material, and as its use in connection with buildings, underground work, and other structures owned by telephone companies is rapidly increasing it should have a practical value to many telephone men. A copy will be sent on receipt of a request.

DAVID SCOTT PLUME, who was treasurer of the Plume and Atwood Manufacturing Co., Waterbury, Conn., died on Feb. 19th. His many friends learn with regret of his loss, and extend their sympathy to the company with which he had been connected since its organization.

THE AUTOMATIC ELECTRIC COMPANY, Chicago, Ill., distributed at the Electrical Show a card of which we present a reproduction on this page. On the reverse side was a regular post card heading, so that visitors might send it out to their homes. It is seldom that a manufacturing company produces so attractive a design as this, and it won the most favorable comments from all who had an opportunity to see it.



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The special BELL-METAL RESONATOR insures that THE OPERATOR gets a very CLEAR, EASILY DISTINGUISHABLE SIGNAL.

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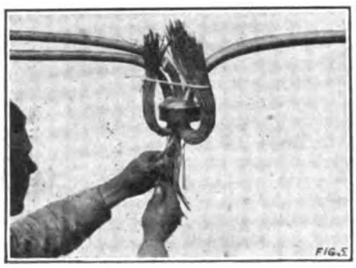

A MONEY SAVER

YOUR TIME

will earn money in direct proportion to your use of it. The use of the Hargis Cable Splicing Joint will enable you to save time. It will enable your regular linemen to make a better splice than an expert cable man. The picture above shows how easy it is to splice pairs by means of the Hargis Joint. They can all be tied out of the way while the splicing is going on.

The Hargis Joint is not a wiped joint in any sense of the word. The cables are simply put thru the cap and lead gasket and the lead is then poured in until the cup formed by the gasket and the brass cap is full. What wiping is done is simply to smooth off the rough edges, and does not add to the weather-resisting qualities of the joint.

HOW TO SAVE YOUR TIME

Let us send you descriptive matter of the Hargis Cable Splicing Joint shown above. By its use you can make a better splice in less than one half the time it takes to make a horizontal wiped joint, and at the same time you can always get into it by means of special tools to test out for trouble along the line.

It will pay you to write for our descriptive matter.

W. N. MATTHEWS & BRO.

Manufacturers of Patented Money Saving Specialties

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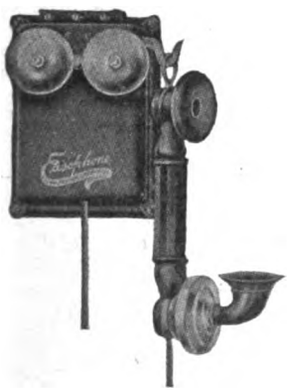

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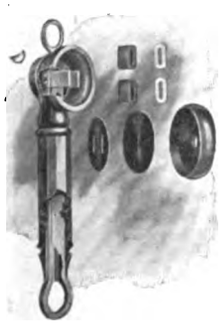
LONG DISTANCE HAND TELEPHONE

LOWEST MAINTENANCE COST

SOLID METAL FRAME ENCLOSED IN VULCANIZED HARD RUBBER



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THE WEEK'S MESSAGES

NEW COMPANIES.

SIERRA MADRE, CAL.—Articles of incorporation have been filed by the Sierra Madre Telephone & Telegraph Company, and the following directors elected: W. E. Farman, J. M. Baldwin, F. N. Hawes, C. S. Kersting, H. I. Thomas. It has a capital stock of $50,000, of which $5,000 has been subscribed.

MARSHALL, ILL.—The People's Mutual Telephone Company, of Marshall, has been incorporated with a capital stock of $5,000. The incorporators are Jas. Davison, Jas. Pickens, and John Welsh.

SOMONAUK, ILL.—An Independent telephone company has been organized at this city, and a franchise granted. The company will be known as the Farmers' Telephone Company.

LAPORTE CITY, IA.—The La Porte City Farmers' Mutual Telephone Company has filed articles of incorporation, and contemplates the erection of a telephone system and the establishment of a modern exchange at this city. The capital stock is placed at $24,000. A. A. Sloan is one of the incorporators.

MERRILL, IA.—The Farmers' Mutual Telephone Company has been organized at Merrill, and the following officers elected: Wm. Lindsey, president; F. Susmihl, secretary; P. Erpelling, treasurer.

PAULLINA, IA.—The Paullina Telephone Exchange Company, with a capital stock of $6,400, has been incorporated by G. W. Lyons and others.

PRINCESS ANNE, MD.—A Farmers Telephone Company is being organized by F. B. Allen and D. E. Peters to construct lines between Princess Anne and King's Creek.

TUSTIN, MICH.—The farmers west of Tustin have organized an Independent telephone company, which is to be known as the Maple Ridge Telephone Company.

STILLWATER, MINN.—A new rural telephone company has been organized by the farmers along the St. Paul and Hudson road, and the following officers elected: Patrick McDonald, president; James Sinnott, vice president; Geo. F. V. Vollmer, secretary-treasurer; A. Richard, J. Cappler, John Mackey, directors.

WINONA, MO.—Articles of incorporation have been filed by the Current River Telephone Company, of Winona. It has an authorized capital stock of $10,000, and the incorporators are J. V. Chilton, John Church, James Holland and others.

RENO, NEV.—In order to break up the monopoly of the Pacific States Telephone Company in Nevada, the local business men have organized the Independent Home Telephone Company, with a fully paid up capital of $100,000. Richard Kirman, president of the Farmers & Merchants National Bank; W. J. Harris, manager of the Tonopah Banking Corporation, and F. A. Bonham are among the incorporators. The new company will at present consider the installation of a system in Reno, but will later extend its lines throughout the state.

ROCHESTER, N. Y.—The Police and Fire Alarm Telephone Company, Rochester, N. Y., has been incorporated with a capital stock of $500,000. The directors of the new company are G. F. Roth, C. P. Chapin, J. L. Hotchkiss, Merton E. Lewis, C. W. McKay, Rochester.

CARDENAS, N. C.—Articles of incorporation have been filed by the Cardenas Telephone Company, whose intention it is to construct and operate telephone lines in the vicinity of Cardenas and other points. It has an authorized capital stock of $100,000, and the stockholders are J. M. Judd, B. W. Burt, S. J. Westhers, J. T. Judd, E. H. Ballentine, J. Y. Ballentine and J. C. Ballentine.

FAIRVIEW, OKLA.—The Fairview Southwestern Telephone Company has been incorporated with a capital stock of $1,000, and among the incorporators may be mentioned T. N. Case, J. W. Howard, J. J. Just and David Cornelson.

SEGUIN, TEXAS.—The Delany Telephone Company has been organized to operate in Seguin and vicinity.

SEGUIN, TEXAS.—A new Independent telephone company, to be known as the O'Daniel Telephone Company, has been organized at Seguin.

SHEFFIELD, TEXAS.—An Independent telephone company has been formed by the business men of Sheffield to construct a telephone systen. from this city to Ozona, a distance of forty-nine miles. The construction of the line will commence at once, and exchanges are to be established at Sheffield and Ozona. Among the incorporators are Garrett Bean, Ed. Miller, L. B. Adams, T. F. Hickox, D. P. Lyles and H. B. Bond.

LODORE, VA.—The Amelia and Powhatan Telephone Company has been incorporated with a capital stock of $5,000, and the following officers elected: O. C. Hooker, president; W. H. Graber, secretary and treasurer; J. E. Morris, J. O. Jones and J. Snook, directors. It is the company's intention to construct and operate telephone lines through Amelia, Powhatan, Chesterfield, Goochland and Henrico counties, a distance of about three hundred miles.

WYLLIESBURG, VA.—Articles of incorporation have been filed by the Wylliesburg Telephone Company, and the following officers named: C. B. Robertson, president; W. H. Owens, vice-president; A. H. Zollinger, secretary and treasurer; W. P. McGuire, general manager. The company has an authorized capital stock of $5,000, and it is its intention to build lines in Mecklenburg, Halifax and Charlotte counties.

BELLINGHAM, WASH.—A new rural telephone company has been organized and is asking for a franchise from the county for the construction of a line from Bellingham to Laurel and Ferndale. The name of the new organization is the Midway Telephone Company, and the officers are: Henry Richardson, president; N. C. Davenport, vice-president; Enos Strode, secretary; J. H. Oltmanns, treasurer.

FRANCHISES.

CARMI, ILL.—A fifty-year franchise has been granted by the city council to the White County Telephone Union. A new building is to be erected and the latest style switchboards installed.

ORLEANS, IND.—A franchise to construct and maintain a telephone system in the city of Orleans has been granted to J. P. Jackson.

MARION, IA.—The Farmers' League Telephone Company, which now has connections with Oraville, Mt. Pleasant, Murphysboro, Anna, De Soto and other places, is desirous of securing a franchise in Marion. If it is successful, connections will then be established with Herrin, Benton, Johnston City and other points.

LANTON, MO.—A ten-year franchise to construct and operate telephone lines from Lanton to Moody has been granted to the State Line Telephone Company.

BRENHAM, TEXAS.—The Navasota-Washington Telephone Co. has been granted a twenty-five-year franchise over the public roads from the Washington county line to Brenham, by the Board of County Commissioners.

DEEP CREEK, WASH.—A telephone franchise to complete its line to Medical Lake has been granted to the Deep Creek Telephone Company.

FINANCIAL.

BETHALTO, ILL.—The capital stock of the Star Telephone and Telegraph Company has been increased from $2,500 to $12,000.

HEBRON, ILL.—The Farmers' New Era Telephone Company, of Hebron, has increased its capital stock from $50,000 to $100,000.

FARMLAND, IND.—At a recent meeting of the Farmland Telephone Company, the capital stock was increased from $3,950 to $12,000, and an eight per cent. dividend declared.

MINNEAPOLIS, MINN.—The directors of the Tri-State Telephone & Telegraph Company have declared the fifteenth quarterly dividend at the rate of six per cent. per annum on the preferred stock of the company, and the twentieth quarterly dividend at the rate of seven per cent. per annum on the preferred stock of the Twin City Telephone Co., both payable March 1, 1907, to stockholders of record of February 18, 1907.

SEWARD, NEB.—The capital stock of the Seward County Telephone Co. has been increased from $50,000 to $100,000, and the board has perfected plans for the construction of several new lines.

OSWEGO, N. Y.—The Wiltseville Telephone Company has increased its capital stock from $480 to $2,010.

MARIETTA, O.—The West Virginia Western Telephone Company, which has established new exchanges at Sisterville, Friendly, New Mata-

NEWS—WANTED

THE matter contained upon the message and Operating Field pages of this paper is contributed largely by our special correspondents. We believe, however, that there are many valuable items of telephonic interest which are never brought to the attention of the public. There is no reason why this condition should exist, and the Editor, therefore, invites all telephone companies and the officials of such companies, to furnish any information that they can consistently make public relative to financial statistics, new construction, elections, franchises and personal items.

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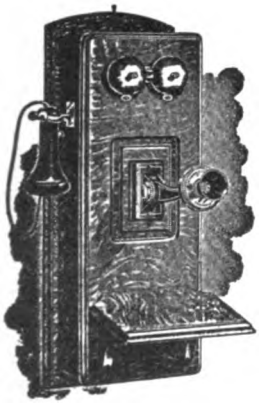

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MICHIGAN WHITE CEDAR POLES

We have a large stock of White Cedar Poles of all sizes, concentrated at a point on the D. & M. R. R. in lower Michigan, from which we can make prompt deliveries. The location of this stock offers exceptional facilities for shipments to all points in Ohio, Indiana, Southern Michigan and the Eastern States. Write us for delivered prices on any size for immediate shipment.

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The metals of which ROEBLING DOUBLE GALVANIZED TELEPHONE WIRE is made are of the best quality to be obtained. The wire is drawn and galvanized by methods which have made ROEBLING wire in demand wherever wire is used. It is the cheapest wire to use, not because it is the lowest in price, but because it will last years after low-grade wire has been discarded.

JOHN A. ROEBLING'S SONS CO., Trenton, N. J.

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THE WEEK'S MESSAGES

moras, and which is rebuilding its exchange at Marietta, has declared its usual quarterly dividend of two per cent., making the dividend eight per cent. for the year.

CONESTOGA, PA.—A three per cent. dividend on the stock for last year has been declared by the Conestoga Telephone and Telegraph Company.

PITTSBURG, PA.—At the annual meeting of the Pittsburg and Allegheny Telephone Company an appropriation of $500,000 was made for extensions and betterments.

MONTICELLO, WIS.—The stockholders of the United Telephone Company at a recent meeting declared a semi-annual dividend of four per cent., making an eight per cent. dividend for the year.

COMBINATIONS.

ADAMS, N. Y.—Several of the local Independent telephone lines in Adams and Rodman are to be consolidated under the title of the Adams Center Telephone Company.

ELECTIONS.

LOCKRIDGE, IA.—The following officers have been elected by the Lockridge Telephone Company: M. Frabert, president; Wm. Bunkhead, vice president; L. Achenbach, O. Swanson, Gus Shileston, trustees.

MONMOUTH, IA.—The Keystone-Monmouth Telephone Company has named as president, D. H. Stagg; vice president, E. L. Barnes; secretary, L. B. Stuart; treasurer, B. R. Dye.

MOUNT AYR, IA.—The following officers and directors have been elected by the Pleasant Valley Telephone Company: President, Grant Swiggart; secretary, M. Griffith; treasurer, J. E. Stuck; directors, J. E. Stuck, O. McAninch and C. A. Fry.

AUDUBON, MINN.—The Audubon Telephone Company has elected the following officers: President, Albert Carlson; vice president, J. P. Boyer; secretary, I. O. Orstad; treasurer, A. O. Norland.

FARMINGTON, MINN.—The following officers have been elected by the Star Telephone Company; J. A. Sanford, president; Henry Sprain, vice president; P. J. Welter, secretary; B. E. Enggren, treasurer; E. P. Ruh, manager.

BAINBRIDGE, N. Y.—The directors chosen by the Bainbridge for the year are W. M. Hastings, J. M. Cooper, R. W. Kirby, R. Corbin, B. Allen, E. Davis and Charles Kirby.

MONTROSE, N. Y.—The new directors for the Montrose Telephone Company are C. A. Jayne, W. D. B. Ainey, E. B. Lacey, H. J. Brande, R. B. Swisher.

ARCADIA, O.—The following officers have been elected by the Arcadia Mutual Telephone Company: President, G. W. Dick; vice-president, C. W. Bricker; secretary, A. L. Anderson; treasurer, E. E. Bish.

POINT PLEASANT, W. VA.—The Point Pleasant Telephone Company has elected the following officers and directors: President, J. S. Spencer; vice-president, E. J. Mossman; secretary and treasurer, T. Stribling; general manager, H. H. Henry. Directors: J. S. Spencer, E. J. Mossman, T. Stribling, Homer Smith and W. H. H. Gardner.

MISCELLANEOUS.

SANDUSKY, MICH.—Messrs Balhoff and Smalldon have acquired William Leggett's interest in the Sandusky Telephone Company.

GRANT CITY, MO.—Connections have been formed between the Grant City Telephone Company and the Farmers' and Merchants' Mutual Telephone Company.

PULLMAN, WASH.—The rural telephone line running from Pullman to Chambers, known as the Barbee-Fletcher line, has been sold to a company of farmers headed by S. H. Breeze. It is the intention of the new owners to extend the system to Johnson, Colton and other towns.

PERSONAL.

B. H. BROOKS, superintendent of the Citizens' Telephone Company of Columbus, Ohio, will sever his connection with that company March 1 to take the position of engineer with the Home Telephone Company of Detroit, Mich.

A. B. CLARK has recently been appointed manager of the Home Telephone Company at Lawrence, Kan.

J. P. GEMMIE has resigned as manager of the Gallipolis Telephone Company of Gallipolis, Ohio, to enter the equipment department of the Cuyahoga Telephone Company at Cleveland, Ohio.

E. J. HOLIHAN has been promoted from the management of the Holly exchange of the Michigan Telephone Company to that of the Owosso exchange.

CLYDE SMITH has resigned the position of switchboard foreman with the Cuyahoga Telephone Company of Cleveland to accept a position with the Home Telephone Company of Detroit, Mich. He will superintend all interior wiring done in that city.

New Construction in the Field

SANTA BARBARA, CAL.—The Home Telephone Company is building lines in Santa Ynez, Los Alamos and Los Olivos. Connections will soon be established between Santa Barbara and Santa Maria, and later on with Lompoc.

SISSON, CAL.—A telephone line from Sisson to Weaverville, by way of Trinity Center, is to be constructed by the forest bureau as part of the system of fire patrol.

GREEN RIVER, ILL.—Additional lines are being built by the Green River Telephone Company.

SYCAMORE, ILL.—Many new lines are being built by the Exchange Telephone Company.

ANDERSON, IND.—It is the intention of the Delaware-Madison County Telephone Company to erect a new exchange building at Anderson. Its entire system is to be rebuilt at this place, and new lines built in many directions.

CORYDON, IND.—It is the intention of the Eureka Telephone Company to extend its lines to all parts of Harrison county.

NEW HAVEN, IND.—Many improvements are being made in the plant of the Home Telephone Company, including the installation of a new switchboard.

HASKINS, IA.—New lines are being constructed by the Mutual Telephone Company.

CASS CITY, MICH.—Construction work upon the system of the Cass City Telephone Company is to be commenced at an early date.

DEXTER, MICH.—The Mutual Telephone Company plans the construction of a line to Hamburg via Lakeland.

ALTAMONT, MO.—Among the improvements contemplated by the Altamont Independent Telephone Company is the erection of a line to Weatherby.

GRANT CITY, MO.—The lines of the Grant City Mutual Telephone Company are to be extended from Grant City to Worth.

RICH HILL, MO.—New lines are to be built by the Butler-Rich Hill Telephone Company.

EUSTIS, NEB.—A new metallic circuit is to be installed by the Eustis South Side Telephone Company.

DALTON, N. Y.—Among the improvements planned by the Livingston Rural Telephone Company is the construction of lines from Livingston to Portageville and other points.

MANCHESTER, N. Y.—It is the intention of the Ontario Power Company to construct a private telephone line on the right of way recently purchased in Manchester.

MARYSVILLE, O.—The Union County Telephone Company contemplates the erection of a new line from Marysville to Richwood.

NEWTON FALLS, O.—The Newton Falls Telephone Company, among other improvements, contemplates the building of a direct line to Warren via Leavittsburg, and two party lines out of Newton Falls.

EMAUS, PA.—New wires are being strung by the Consolidated Telephone Company in Emaus.

HUNTINGDON, PA.—A new switchboard is to be installed by the Huntingdon & Clearfield Telephone Company, and the entire local system materially improved. New lines are also to be built.

MT. PENN, PA.—The Consolidated Telephone Companies of Pennsylvania are building a new line through Mt. Penn.

PORT TOWNSEND, WASH.—The Independent Telephone Company, a corporation composed largely of local interests, which has recently established connections between Port Townsend and Port Ludlow, is now at work on a line to Seattle.

WEBLAKE, WIS.—It is the intention of the St. Croix Mutual Telephone Company to construct lines from Weblake to Orange, Gordon and other points.

VEGREVILLE, ALB., CAN.—The town has applied to the provincial government for information and assistance towards building a municipal telephone system. Address F. A. Morrison.

FORT WILLIAM, ONT., CAN.—The town will spend $26,000 this year in improving its municipal system. Address Mayor Routledge.

UNDERGROUND.

MT. PULASKI, ILL.—Considerable conduit work is being done by the Mt. Pulaski Telephone Company.

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LOCUST PINS AND CROSS ARMS YELLOW PINE, IN TOLEDO FOR QUICK SHIPMENT.

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16 to 25 ft.
4 to 6 in. Tops
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26 YEARS HAVE WE BEEN PRODUCING POLES. WRITE US

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POLES

20 and 25 foot lengths for rural telephone lines a specialty.

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CHESTNUT—CEDAR—CYPRESS
POLES and PILING
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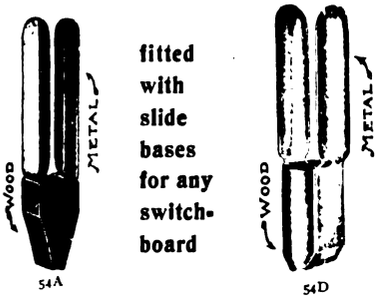
General Electric Company

Edison Telephone Lamps



54A 54D

fitted with slide bases for any switch-board

Cuts show styles for both Bell and Independent companies.

887

EDISON DECORATIVE AND MINIATURE LAMP DEPARTMENT, Harrison, N. J.

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That's Our "New Form"

Many companies are now using it, and all are pleased. Ask for circular describing it. Order early and avoid the rush.

WE ALSO FURNISH

Toll Tickets.	Trouble Tickets.
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Cash Books.	Card Index System.
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All kinds of blanks, books and forms for Telephone and Toll Line Accounting. Write for sample forms and prices.

TELEPHONE PRINTING COMPANY
Defiance, Ohio

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Manufacturers of

BACK BRACES AND SHIMS

We Galvanize by the Hot Process

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WATERING a lawn once won't keep it green the rest of the year. Advertising once won't make any noticeable difference in the annual profits.—*Judicious Advertising.*

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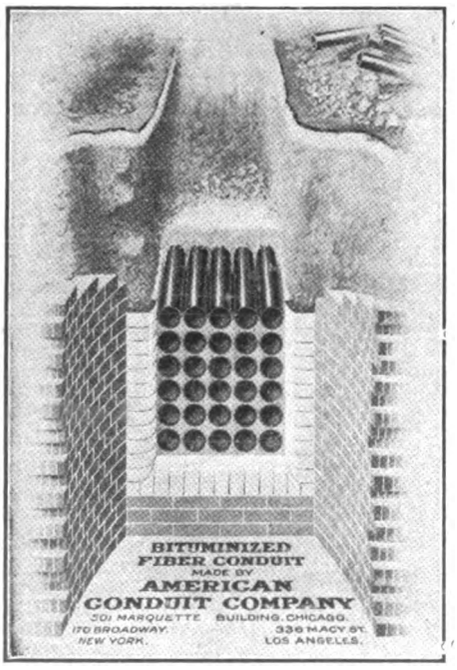
For the protection of our customers we advise that Klein's Pliers are being imitated to LOOK LIKE KLEIN'S. This, however, does not make them Klein's. CAUTION. Look for this stamp, M. KLEIN & SONS, on the inside of handles—NONE are genuine without this stamp.

Use only genuine Klein's. They are the product of years of experience and have stood the test of time.

MATHIAS KLEIN & SONS · · HICAGO, ILL.



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Our Portable Instruments are recognized as THE STANDARD the world over. Our STATION VOLTMETERS AND AMMETERS are unsurpassed in point of extreme accuracy and lowest consumption of energy.

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HYDE'S TELEPHONE TROUBLES AND HOW TO FIND THEM

ELEVENTH EDITION NOW ON SALE

This Little Book is Strictly Up-to-date on all Matters pertaining to Telephone Troubles and their remedies on both Magneto and Central Energy Systems. The New Edition contains a lot of new matter and diagrams on the following subjects: "Low and High Wound Frequency System," for four party selective lines. "How to Test and Repair Toll Lines," "New Specifications for Inside Wiring," "The Use of Condensers on Rural Lines," etc.

SENT POSTPAID ON RECEIPT OF PRICE, 25c., BY **THE AMERICAN TELEPHONE JOURNAL CO., 100 William St., New York City**

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Do You Get It ! !

Your own fault if you don't.

Drop us a card and we will mail you our "to the minute" net price list of Pole Line LUMBER-HARDWARE and WIRES. It is issued for your use. —Get all that is coming to you.

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COMMERCIAL

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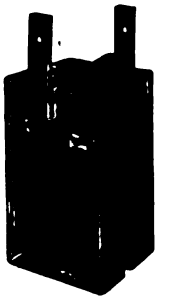

For signal systems and like installations requiring small amounts of current from a wholly reliable source, the Gould Couple Type Storage Batteries are giving unusually satisfactory service. They are compact and simple in construction, readily assembled and require minimum care and attention.

Write for complete information.

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Gould Storage Battery Co.

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JUST A SUGGESTION

Take one of your busy 4-party lines and equip it with "POOLE" Lock-Outs. Leave it in service a month and then see how many of the four will stand a raise of $3.00 a year rather than go back to the old way. We know the answer, but we want your subscribers to impress on you the fact that the "POOLE" Lock-Out is a rate-raiser.

It won't cost you anything to try it, because we will loan you the Lock-Outs free and there is no other equipment required. Write today for our Booklet AL-2.

Mountain State Electrical Company

WHEELING, W. VA.

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DEAN TELEPHONE APPARATUS

Selective Party Line Express Type Switchboards

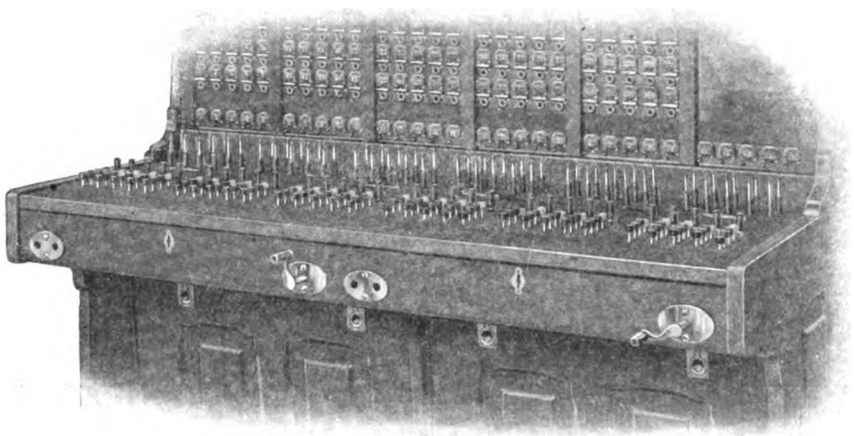

Fig. 1 of the accompanying illustrations shows the Dean four-party indicating and single listening key which shows the simplicity of its construction. When this key is mounted in the switchboard key shelf the only contacts hidden are those of the normally opened variety—few in number and the kind that never give trouble.

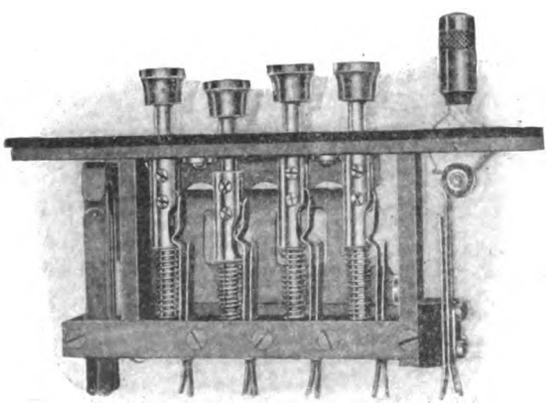

FIG. 1.

The only contacts in the talking circuit due to this key are mounted at the front of the construction, in plain view when the shelf is open.

This is the kind of simplicity which makes our complete selective party line system reliable in every sense of the word.

The switchboard key shelf shown herewith illustrates the simplicity of accurately operating each cord circuit with an indicating ringing and listening key, which permits the last key operated in any cord circuit to remain in a depressed position. Thus it is only necessary for the operator to reoperate the depressed key for the second call on the same circuit.

For additional information concerning the many valuable features incorporated in the various types of our express switchboards ask for our No. 6 booklet.

Factory and General Office
Elyria, Ohio

Branch Office
Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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Stromberg-Carlson Telephone Mfg. Company

Rochester, N. Y. March 9, 1907.

TO THE EXCHANGE MANAGER AND TELEPHONE USER:

After five years' experience in the manufacture of various forms of cords, we believe we offer an article of the highest quality and greatest utility.

Every cord has an important function to perform as part of the switchboard and telephone. Therefore every kind of thread, every weight of copper tinsel and every size of brass or steel wire used in STROMBERG-CARLSON cords is of a selected quality, size and strength that will satisfactorily produce the strongest cords of the least ohmic resistance and greatest conductivity

The STROMBERG-CARLSON method is to begin with the materials in bulk forms. We personally supervise the first important operations of selecting, sorting and cleaning all material perfectly. By maintaining a modern equipped dyeing and drying department, we produce perfectly finished products.

STROMBERG-CARLSON Standard Receiver and Desk Telephone Cords may be used with all forms of apparatus. We also make special cords of the same construction, designed especially for use with dental machinery, testing apparatus and other apparatus.

We solicit correspondence pertaining to all forms of cords for this work.

In our next letters we will describe the STROMBERG-CARLSON tinsel and steel type Switchboard Cords.

While you are thinking about buying, may we present our samples and NEW PRICES?

Yours very truly,

Stromberg-Carlson Tel. Mfg. Co.

CL No.3.
HCS/OB.

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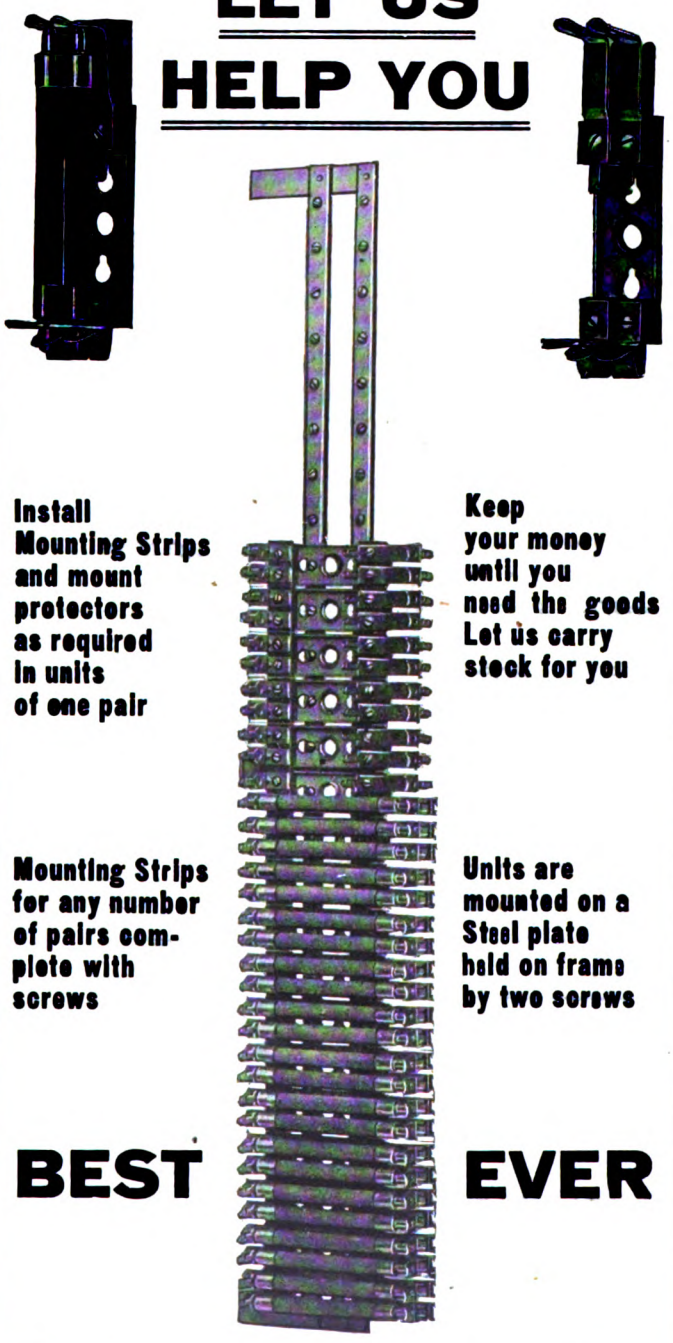
INSTALLMENT PLAN

UNIT TYPE FUSE AND CARBON PROTECTION

LET US HELP YOU



Install Mounting Strips and mount protectors as required in units of one pair

Keep your money until you need the goods Let us carry stock for you

Mounting Strips for any number of pairs complete with screws

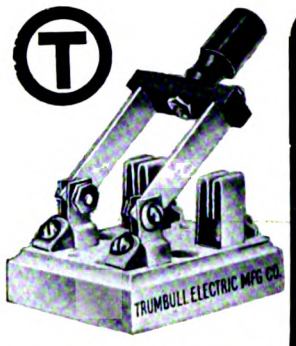
Units are mounted on a Steel plate held on frame by two screws

BEST **EVER**

Sterling Electric Co.

Makers of Good Goods

LaFayette -- -- -- Ind.



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"* * * * * We have used Trumbull Telephone Switches for several years and they have proved decidedly efficient. Their new construction with the clips held in depressions in the bases is a great improvement. * * Above all, every Switch is good. **We find no defective parts.** * * *."

YOUR EXPERIENCE WILL BE THE SAME IF YOU WILL ONLY USE THEM.

WRITE FOR OUR BULLETIN.

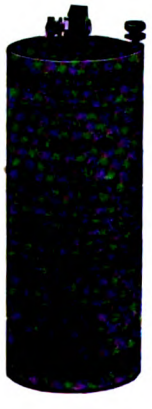
THE TRUMBULL ELECTRIC MFG. CO.

NEW YORK 136 Liberty St. PLAINVILLE, CONN. BOSTON 65-67 Oliver St.

BATTERIES WITH BRAINS

Not that Nungesser Batteries have brains, but that it takes brains to make them.

Brains trained through nineteen years' experience, studying the many problems of battery manufacture, give to the "1900" Dry Battery a superiority that is best attested by its extensive and ever-increasing use in all parts of the world where dry batteries are used.



If the name NUNGESSER is on your dry batteries you may be sure they are right, and yet it costs you no more to get this stamp of excellence and the good service that always goes with it.

Stromberg-Carlson Tel. Mfg. Co.

ROCHESTER, N. Y. CHICAGO, ILL.

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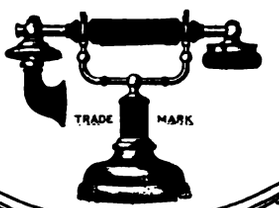
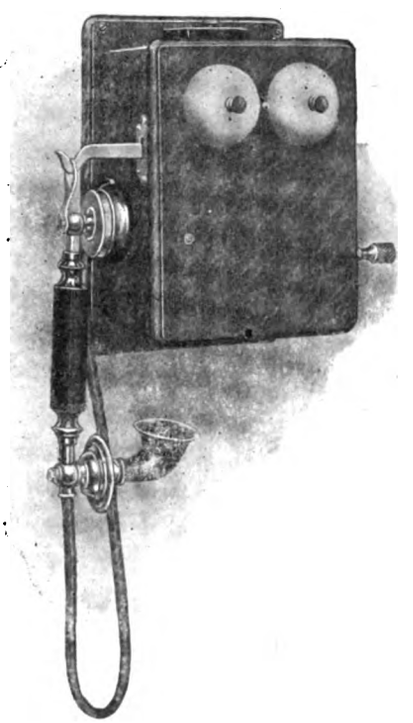


Ericsson Magneto Residence Telephone

"Experience is the best teacher,"
But apt to prove an expensive instructor.



Our experience embodied in the high-grade telephones we manufacture is at your service.

Your experience when using the Ericsson instruments will be most satisfactory.

The Ericsson Residence Telephone affords unusual convenience to the subscriber. The use of our Hand-micro avoids the necessity of standing when telephoning.

The superior finish of our woodwork deserves particular mention.

L. M. ERICSSON TEL. MFG. CO.
BUFFALO, N.Y.

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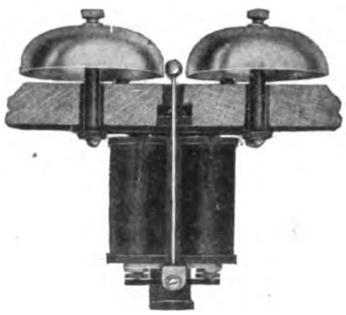
KELLOGG

TELEPHONE APPARATUS

KELLOGG COMPACT DRY CELL TYPE TELEPHONES

CONTAIN KELLOGG RINGERS



The Standard No. 1-A Ringer is wound to 1000-ohms resistance and embodies the important feature of letting the armature remain in its usual place and causing the pole pieces to move toward and from it, eliminating the necessity of bending the tapper rod or changing the adjustment of the gongs in order to regulate the tapper stroke. It remains permanently adjusted but affords extremely delicate changes. The Ringer Circuit is simple and all parts of the Ringer are thoroughly tested. The Coils are so wound that they are least liable to total destruction from lightning discharge. Every part of the ringer is made from the best grade of the most suitable materials and assembled by the most skilled workmen.

Let our Department A furnish you with our Bulletins and prices on Magneto Apparatus. We solicit your correspondence.

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Keystone Tel. Bldg.	Electric Bldg.	1413 Main St.	318 W. Second St.

KELLOGG SWITCHBOARD & SUPPLY COMPANY
CHICAGO, ILLINOIS, U.S.A.

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Don't Use Two Pounds of Wire Solder

FOR TELEPHONE SOLDERING THAT CAN BE DONE BETTER AND QUICKER WITH ONE POUND OF

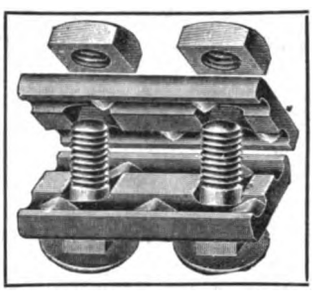
Belden Resin Core Solder

WITH OUR SOLDER YOU L'N NATE CORROSION AND DO NEATER WORK. SAMPLES AND PRICES ON APPLICATION.

Send for Belden Catalog of Wire Cords, Sleeving and Solder

BELDEN MANUFACTURING COMPANY

194 MICHIGAN STREET, CHICAGO



Two and three bolt strand clamps, anchor rods, ground rods, test clamps, pole platforms, "L" messenger brackets, and anything in the way of pole line hardware for telephone, telegraph, electric light and railway companies.

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Cash Register and Pay Station

[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

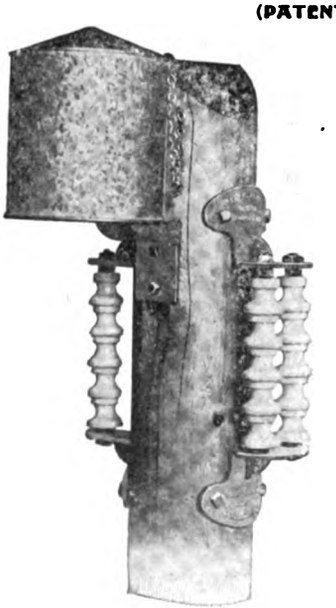
THE

United States Coin Register Co.

TOLEDO, OHIO

ROBINSON DISTRIBUTION RACK

(PATENTED)



This cut shows the ROBINSON RACK as used in connection with Can Top. Its extreme flexibility makes the Robinson Rack a most desirable method for distribution. No waste of insulation. Costs 50 per cent less than circle top. Easy to trace circuits. Can distribute five pairs from one side of pole; ten pairs from opposite side. Notice special drip feature.

Let us send you circulars and prices.

MANUFACTURED BY

The W. G. Nagel Electric Co.

26-30 ST. CLAIR ST., TOLEDO, OHIO

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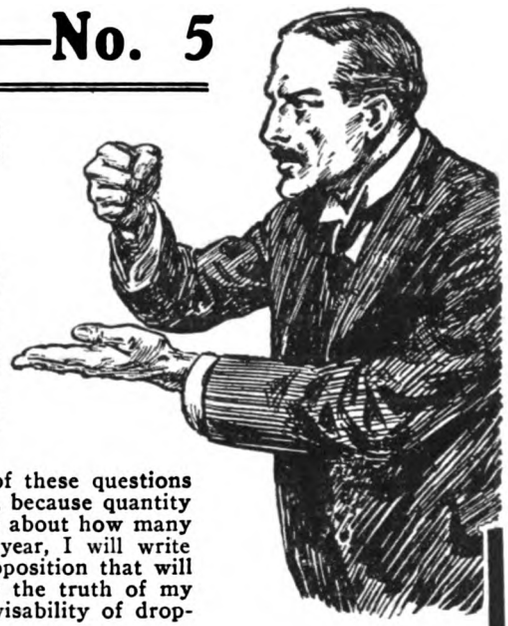
Talks With The Buyer—No. 5



I am not doing a monologue act with these talks. Perhaps you can't hear the other buyers talking back, but if you could see the letters, questions asked and orders received, you would fall in line.

A Word About Telephones

One man wrote: "What does the word 'Telephone' stand for in your name? Do you make telephones?" A natural question. A helpful suggestion. I have been so enthused over the especially attractive "supply" offerings that I have not emphasized our position as telephone manufacturers, our ability to furnish absolutely high grade equipment and at attractive prices. There are over a hundred manufacturers of telephone equipment in this country. Half of them are soliciting a share of your orders. Some exchanges have samples of at least a quarter of the number. At times you wish there were only two or three in the business. You ask: "Why should I buy 'Central' 'phones? Do they make their own equipment? Are they offering a supply house, 'mail order' grade or High Grade 'phone? Can they give me the quality that I require? Have they the factory facilities for making such prompt deliveries as I demand? Wherein is their proposition different from any one of a dozen presented to me?"

You can readily see that in this half page I cannot answer all of these questions satisfactorily either to you or to me, nor can I very well quote prices, because quantity and your individual requirements govern the case. If you will tell me about how many 'phones you are going to purchase in the next ninety days or one year, I will write you a personal letter by return mail and will make you a special proposition that will be well worth your while to entertain, submitting samples to prove the truth of my statements. Does not your good business judgment suggest the advisability of dropping me a line now before you put this paper away?

CENTRAL TELEPHONE & ELECTRIC CO., Makers of High Grade Apparatus Dealers in Telephone Supplies **St. Louis AND Dallas, U. S. A.**

REASONS WHY

YOU SHOULD INSTALL

THE CALCULAGRAPH

No. 8

(See "Reason Why" No. 9 next week)

IT PROMOTES OPERATING EFFICIENCY

Because it obviates the necessity for talking between operators and enables an operator to concentrate on the most important work in hand—that of making connections between subscribers. It relieves the operator of all clerical work and

It Makes No Clerical Errors **Catalog Sent on Request**

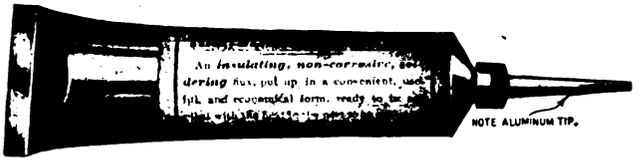
CALCULAGRAPH CO.

1437 Jewelers Building **New York City**

Agents for Canada: Northern Electric and Manufacturing Co., Ltd., Montreal.

ECONOMICAL SOLDERING WITH BLAKE TUBE FLUX

The tube keeps the flux free from dust and dirt. Just the right quantity can be put on the spot desired. It saves time,

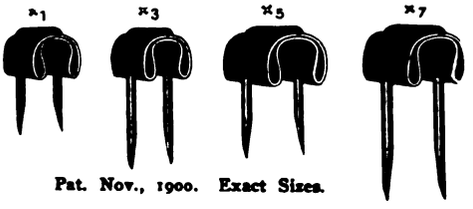


as both hands do not have to be used to get the flux on a splint and then on the work.

Trial tube, postpaid, 20c. Order now.

USE BLAKE INSULATED STAPLES

They cost a little more, but are economical in the end. Bare staples corrode, eat through the insulation on the wire and cause a short circuit. Sometimes the whole job is torn down to find this break.



Pat. Nov., 1900. Exact Sizes.

The double fibre insulation prevents the metal from coming in contact with the insulation on the wire. Ask for prices and descriptive folder.

BLAKE SIGNAL & MANUFACTURING CO.

246 SUMMER STREET : : : : : BOSTON, MASS.

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The American Telephone Journal

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VOLUME XV. *SATURDAY, MARCH 9, 1907.* *NUMBER 10*

Laying the Hadlyme Submarine

By John Putnam.

Illustrations from Photographs by the Author.

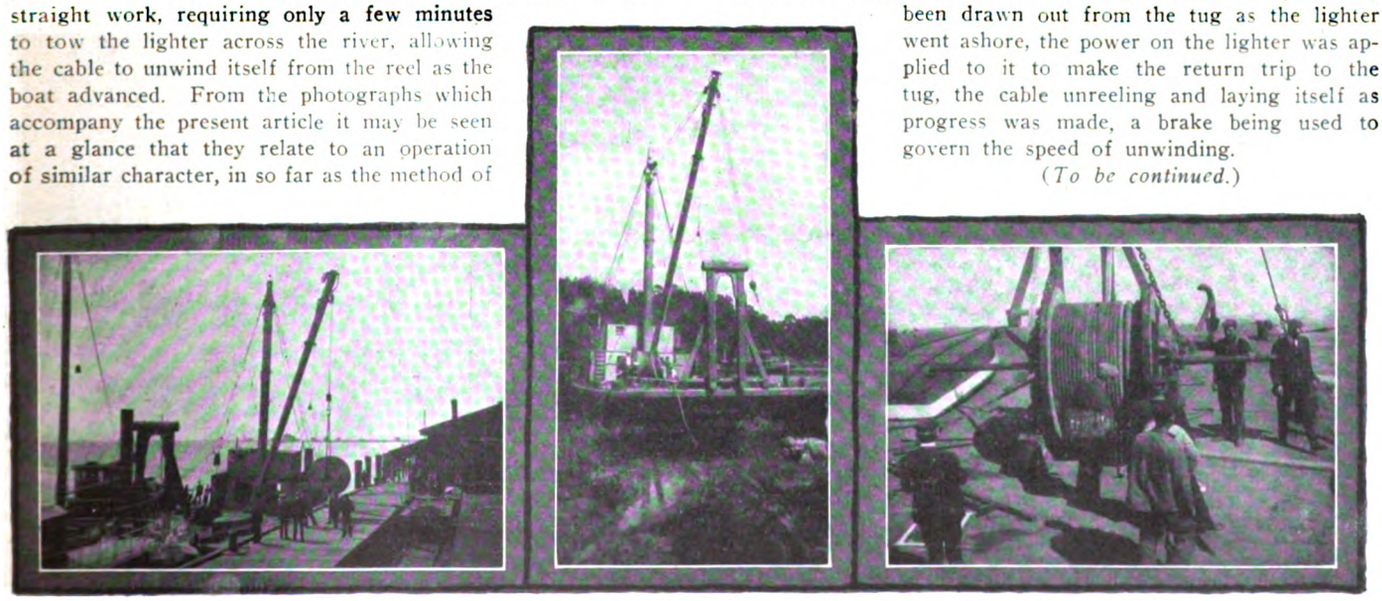
DURING the progress of the work of making extensions of the telephone system which serves the country on both sides of the Connecticut River, and along the inlet-indented shore of Long Island Sound, submarine cables have been laid from time to time, and in a large number of widely separated locations. Each separate length of cable has been laid under circumstances causing interesting variations, at least in detail, from the methods used in earlier instances when it was necessary to carry a group of telephone conductors between two opposite shores. Such variations have been due, in the main, to differences in environment—as, for instance, that existing between a salt water inlet and the river, the varying depth of water, the availability of surrounding objects on shore as auxiliaries, and the considerations which determine the most suitable method of carrying the free end of the cable across the water, after one end has been fastened on shore. Questions of economy and progressive steps due to the improvement in the understanding of methods of handling this kind of work on the part of those under whose direction it was carried on, as the experience in earlier jobs was brought to bear, have of course had their effect in the later instances.

Last summer there were published in The American Telephone Journal two articles describing cable laying by different methods. One told how a cable was pulled across the Connecticut River at Middletown by a locomotive, and the other described the manner of placing a very heavy submarine at the bottom of the Thames River at New London. The cable at this place was transferred directly from the car to a lighter which was then towed by a tug to one of the established terminal points. After this had been reached it was a simple piece of straight work, requiring only a few minutes to tow the lighter across the river, allowing the cable to unwind itself from the reel as the boat advanced. From the photographs which accompany the present article it may be seen at a glance that they relate to an operation of similar character, in so far as the method of supporting the reel and conveying it from the wharf to the scene of action is concerned.

At Fenwick, near the mouth of the river, the cable was swung from the car to the lighter by a derrick, as shown in the first illustration. Through the middle of the reel was passed a steel shaft, the ends of which were supported on blocking, set firmly on the deck. With the reel of cable firmly secured there remained for the construction men nothing to do while the two-hours trips to Hadlyme was being made. The right hand photograph shows the reel on its blocking as it appeared at this time. The position of the reel of cable set up on the deck is clearly indicated, and the upturned rowboat is included as an essential part of the outfit, which will later find good use. The middle illustration shows conditions when the destination was reached, and it was then that the real difficulties involved in laying a cable at this point were seen.

The main channel of the Connecticut River at Hadlyme runs close to the east shore and in width extends from the shore to about the middle of the stream. This leaves a broad stretch of shallow water extending to the west shore, across which the tug could not go. The tug and lighter, carefully feeling their way by the lead, went to the west side of the channel, and the tug, being unable to go further without getting aground, cast anchor. A line was then taken ashore and fastened to a large tree. The aboard end of the line was passed around the drum of the lighter's steam winch, and she pulled herself to shore by her own power. Reference to the photograph clearly shows the situation, the lighter near the shore, the cable end passed to the land and ready for unreeling, while beyond the lighter the tug can be seen lying off in the channel of the stream. A rope having been drawn out from the tug as the lighter went ashore, the power on the lighter was applied to it to make the return trip to the tug, the cable unreeling and laying itself as progress was made, a brake being used to govern the speed of unwinding.

(To be continued.)



Transferring the Reel of Cable from Flat Car to the Deck of the Lighter. *Lighter Inshore, Tug in Midstream, Cable End Ashore, Ready for the Start Across the River.* *Cable Resting on Deck of Lighter During the Trip Up River.*

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Independents until its resources are exhausted, but the governing law, which is a product of the industry itself, will remain just the same, and the faster the Bell buys up and tries to stifle its growth, the faster will the second telephone idea develop.

If you were a railroad man and had more freight to move than you could haul with one engine, would you not get two engines and make two trains out of it?

Now here is the startling fact that the writer is going to try to prove, and can prove, that the very nature of the business which would appear, on the surface, to make it necessary that there be a monopoly, is the actual condition that makes competition necessary. Further, it is this condition which has caused the tremendous development throughout this country of the so-called Independent telephone.

Do we suppose that three million Independent telephones have been put in operation in this country in the last few years simply on account of the public abhorrence of monopoly? Are we to suppose that this condition has come about simply because directing brains of the Bell telephone company have been actuated by mercenary motives so that an opening of such vast proportions has been left? Are we to assume that, although this condition exists to such tremendous proportions, there should be no need of its existence if the telephone business had been conducted along proper lines? All these are far from the facts. The Independent telephone exists to-day because of a condition that is natural in the business, and which is not controlled in any way, and cannot be controlled by the governing policy of any board of directors.

If all the Independent telephone companies of this country were consolidated with the Bell Telephone Company to-morrow, a tidal wave of competition would again start over the nation that would be more startling than even the present development. We have read, with interest, Martin W. Littleton's brief presented to the New York Board of Franchises in behalf of the petition of the Atlantic Telephone Company. We have read Harry P. Nichols's report presented to that same board. Yet, neither of these, or even other literature, has yet touched upon the real reason why competition exists, and why it will exist.

The Bell people say it is bad to divide the business in a city. Is there, in telephone history, a record of a city where competition exists where the Bell company has not to-day more telephones than it had when competition started? Then, their business has not been divided, but added to.

In no place in the world is competition more necessary than in New York City, and that competition is, after all, not made necessary because the Bell telephone company is charging exorbitant prices, or because it is not developing a field that it could develop, or because the New York Telephone Company is not conducted on business lines. Competition is necessary, or rather two telephone systems are necessary in New York, and in any city, to develop a field that now exists undeveloped, and will remain so under one system, because it is impossible to attain the highest state of development under one operating unit.

It is a fact that the cost of operating, per telephone, increases with the growth of a system. It is a certain fact that the cost of handling each message over a telephone costs more as the number of telephones in a system grows. Now, if the cost of operating a telephone increases as the number of telephones in a system increases, then the charge made to the subscribers for that service must increase, and it has been and is increasing.

Now, if ninety per cent of the people of New York City, or any city, are to-day without telephone service, it is natural to assume that they are without it on account of the cost. Then, if this is true, how in the name of all that's reasonable is the ninety per cent going to get any closer to telephone service if the cost of the traffic is continually increasing as the system increases numerically? That ninety per cent is getting farther away from it every day, and the New York Board of Aldermen may study and debate for all time, and that condition cannot be changed so that one system can take care of the entire business. The only thing that will change the condition is invention or improvement which will reverse the now governing law of the industry that the cost to the subscriber must increase as the subscribers increase numerically.

The Bell telephone company has been increasing its rates everywhere since the starting of the business. It has apparently realized vaguely, and does now, that this law of increase in rates in proportion to numbers governs the art, and has been trying to combat and counteract the law in different ways. One of the ways was to introduce measured service, decreasing the cost of the instrument, but increasing the cost of the traffic, or message sent from the instrument. It has tried other methods by departing from the exclusive line service to party line service, where one individual line can be made to bring in a greater revenue, and yet represent a lower cost to the user; by limiting the use until, to-day, in the large cities, it charges a low price for a telephone with an absurd price for the calls over it, and all in an endeavor to counteract that governing law of increased cost with the increase in numbers.

This increase in cost it attempts to justify by the assertion that as the number of telephones increases, so the value of each telephone increases to a subscriber. This is not literally true. There is not a subscriber in New York City who uses, or has any use for, two per cent of the entire number of telephones in that city, and yet each subscriber is compelled to pay a price made necessary through the fact that it is possible for him to connect to the ninety-eight per cent to whom he never talks, and probably never will. You will say at once that this is absurd, and that it would be an impossibility to limit a subscriber's connecting possibilities to only those stations with which he communicates. This is very true, and until that very apparent impossibility is eliminated by the process of invention, or the increased cost of each station, as additional stations are added, is eliminated by the advent of improvements, we shall see in force the natural law which says two systems are necessary. So two systems will exist, and two systems must of necessity be in operation before the development of the telephone service can be carried to anywhere near the point that it should reach in a city.

Practically all the largest cities of this country have granted competitive franchises. Are we to suppose that they were all granted just because the existing telephone companies did not behave themselves, and that there was no deeper basis for the action than that? Does the New York Board of Aldermen assume that all the cities of the country have made a vast mistake and New York alone stands correct? Does Mayor Fitzgerald, of Boston, suppose that practically every legislative body in the United States is wrong and that he alone is right when he vetoes the Boston franchise? It would seem so, but these franchises have been granted, the industry has grown, others will be granted, and the business in the new places will continue to grow, because the laws of the business demand it. That law which is accountable for under-development where there is only one system cannot be changed by the polished writings of G. W. Anderson, the Boston lawyer; by the volumes of statistics compiled for the edification of President Fish, of the Bell telephone company, and his board of directors; by the veto of Mayor Fitzgerald; or by the inspired Merchants' Association report. Every city and municipality in this country will have telephone competition, and the artificial barriers erected by legislative bodies cannot withstand continually against the natural law of the business itself.

The value of a telephone is not necessarily directly in proportion to the number of other telephones that can be reached by a particular instrument, but that telephone is the most valuable to a subscriber which supplies to him the greatest percentage of responses to the demands that may be made upon it. As an illustration:

The subscriber in a little village to a system of thirty or forty telephones will be able to derive greater relative personal benefits from the use of his telephone at one dollar per month than will the subscriber in New York City get from his telephone with its three hundred thousand connections, if it is a fact that the percentage of population reached in the village by the little tele-

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phone is greater than the percentage of population reached by the New York system in comparison with the total population of New York. The real value of a telephone does not necessarily depend upon the number of telephones reached, but depends to a greater extent upon the percentage of people reached in a community. If, in the little village, the farmer's telephone reaches fifty per cent of the population of that village, and the telephone in New York City only twenty-five per cent of the population in New York City, that telephone in the village is relatively twice as valuable as the one in New York City, and yet the subscriber in New York has to pay ten times the amount of money for his instrument.

Now we come to the real basis of the problem. We will assume that the percentage of the people, or residences, in New York City without telephones is ninety per cent, and it is reasonable to assume that they are without telephones on account of what is to them a prohibitive price. When the price per telephone message, which is the real basis for the charge, is increasing, is not the right and privilege of using the telephone getting further away from that ninety per cent of the population instead of getting closer to it? Is not that very undeveloped field the opening for the Independent telephone? Is it not just such a field that has first been developed by the Independent telephone companies over the entire country? Who ever heard of the Independents growing in a very large city and the Bell absolutely going backward? That undeveloped field is now in New York City, and will continue to remain in New York City just so long as only one system exists. The development of that field does not depend on what the Board of Aldermen say, or what inspiration the Merchants' Association may have on the subject, but on how long the people are going to stand for it.

The permanent development of a single telephone system in a community will depend upon the increased population of the wealthy in that community more than on any other reason. Of course, temporary relief may have beeen brought about, and is being attempted, by the introduction of party lines, so that the increased cost is subdivided among a number of subscribers, and also by the introduction of a measured service system, whereby the cost of the telephone instrument is reduced to the subscriber and the price added to the message, thereby limiting the use of the service so that an apparent reduction in the price of the telephone may be displayed to the people. Another way is by the introduction of the slot machine in residences, which may make it possible for more people to have telephones, but it does not decrease the message cost. After all, the telephone instrument is not the valuable part of a telephone system to the subscriber, but rather the message, and this temporary development is the spreading of the telephone instrument being paid for by the increase in price imposed on the telephone message. This is only a temporary relief, and the telephone engineers know it. The cost of a telephone message to-day is greater to the subscriber in New York City, and also to the company, than it ever was before. Too many people reckon cost from the telephone instrument rather than from the standpoint of the message. The housewife in New York City telephones to her grocer just across the street, and the cost of that call is far out of proportion to what it should be, because the housewife's telephone is part of a mammoth system.

The greatest development where a single system is operating in a city has been brought about through the introduction of party lines, which serve primarily to decrease the cost of a telephone per subscriber without decreasing the actual line revenue. That, however, is a temporary relief, so that it is an absolute impossibility, through the nature of business, for one telephone company to supply the demands made upon it in a large city, and this condition makes it absolutely necessary to have a second telephone company.

Now comes the question of the business man who says he does not want two telephones. This is almost too absurd to admit of discussion. The business man does not have to have two telephones if he does not want them, and never yet has a business man had the one telephone he is using deteriorate in value, or in range of connections, because a second has come in. He is not worse off because the present limit of his service is not subdivided, and he has the added advantage of competition in the regulation of ills. Furthermore, if a subscriber had a telephone on one system that was numerically as large as the two systems would be combined, then the cost of that one telephone would be as great as the cost of the two under separate systems. In addition to this, it would be a physical impossibility for one system to develop as one unit to as great proportions as the combined development under two units, because, on account of the increased price necessary for each telephone under the one unit, the service would be prohibitive to a large percentage of the people who have one telephone under two operating units.

Now, what is the solution? Here's a suggestion: After the Bell interests get tired of buying up Independents and find that it is impossible to eliminate opposition in that way, and after the Independents get over thinking that the Bell is a heartless octopus and must be obliterated, then the two interests will begin to look at the situation in a sane and reasonable manner and from a business standpoint. From that moment real, solid and lasting development will take place on a sane and practical basis, and it is quite likely that after a suitable understanding of the requirements of conducting the business, and a high state of development have been reached, intercommunication between competing systems in a city will be brought about on a small toll basis. Thus a subscriber to one system may be able to communicate with a subscriber on another system by the payment of a toll, which is a source of revenue in exchange for a convenience that both interests are now overlooking in a strenuous business opposition which, without doubt, is resulting disastrously to both companies in many places. When this condition is reached, and only then, may come about a consolidation of all long distance lines, and they will class themselves as common carriers, either by their own initiative or by legislative persuasion. Business will be accepted from and transmitted to any company, whether Independent or Bell, so long as that company complies with reasonable regulations necessary to such a condition. Then the real development of the telephone service will commence, and the disastrous policies now a part of the management of both interests will be a thing of the past.

ROONEY'S PAY STATION SIGN.

THE Doan Exchange manager at Cleveland, O., received a complaint from Benfield's pharmacy recently to the effect their pay station sign was not large enough to be conspicuous. The manager, on referring to the record, found that the large square sign was supposed to have been installed, but he questioned Troubleman Smith, who said that he distinctly remembered having seen the small oblong type over Benfield's entrance. While this matter was being talked over, Line Foreman Rooney reported in by telephone.

"Where are you talking from?" inquired the manager.

"Benfield's dhrug house," replied Rooney.

"Well, that's very fortunate," said the manager, "as we can clear up a matter we have under discussion. Did you notice the sign over Benfield's door, Pat?"

"I did thot," responded Pat.

"Well," continued the manager, "Smith says it is a rectangular sign, but our record shows differently."

"Will, I should hope it would," answered Pat. "Phwat's thot Smith said it were?"

"Rectangular," repeated the manager.

"He's a loir," promptly asserted Pat. "It's a pay station sign, thot's phwat it is."

BOSTON BELL COMPANY ANNOYED BY INVESTIGATION AND PUBLICITY.

INSIDE history of many of the deals made by the Bell company operating in Boston makes very interesting reading, but the officials do not like to see it printed. The hearings before the Massachusetts Highway Commission give the newspapers an opportunity to bring out many damaging facts.

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Rural Party Line Ringing Codes

AMONG the numerous replies to a request for information concerning ringing codes for rural telephone lines, the following describe plans which show features which are likely to be especially interesting from one point of view or another.

From Elmer Koontz, Walkerton, Ind., comes the following information:

"In our code the number designates the line or drop number, and a letter gives the number of rings, determined by the telegraph code. As we limit the number of subscribers on a line to ten, that is the number of letters we use in making up the code.

36—I · ·	36—A · —	36—W · — —
36—S · · ·	36—N — ·	36—G — — ·
36—H · · · ·	36—D — · ·	36—K — · —
	36—U · · —	

Table 1.

"For the information of the operators we write out the code on a slip of paper, which is posted in front of the operator at each switchboard position. They soon learn the code, and do not need to refer to the slip when a call comes in. The code may be tabulated as in Table 1, line 36 being taken as an example.

"We use the letters for each party, beginning at the one nearest the central office, in the order shown in the table, and by referring to our record can see where each party is on the line.

"Subscribers are not furnished with the code. If any person wishes to call a person on his own line with whose ring he is not familiar, the operator tells him what to ring."

A code using numbers to designate the rings, which must be memorized by the operator, has been arranged by George E. Shoemaker, proprietor of the Lancaster and Cedarville Telephone Exchange, Freeport, Ill. The code covers a very heavily loaded line by a very simple plan. The ring number follows that of the line, separated from it by a dash. The plan as worked out for 36 parties is shown in Table 2.

A description of a simple code which has given very good results is contributed by Clarence King, of Machias, N. Y., as follows:

"Our system of call signals is so devised that they may be easily used in directory, and each will indicate the line and ring. The operator has nothing to learn, the calling party telling exactly what to ring and where. Our lines are numbered to correspond to the drops, in the usual way, and this number in the directory is followed by a dash to separate it from the ring number.

"The rings are shown by figures and letters, the figures in-

1 ·	10 — · ·	19 · · · —	28 — · · · —
2 · ·	11 — · · ·	20 · · · · —	29 — — — ·
3 · · ·	12 — · · · ·	21 · — —	30 — — — · ·
4 · · · ·	13 — — ·	22 · · — —	31 — — — · · ·
5 —	14 — — · ·	23 · · · — —	32 · — ·
6 — —	15 — — · · ·	24 · — — —	33 · · — · ·
7 — — —	16 — — · · · ·	25 · · — — —	34 — · — ·
8 — — — —	17 · —	26 — · —	35 — · — · ·
9 — ·	18 · · —	27 — · · —	36 — — · —

Table 2.

dicating short rings and their number, while the letters each mean one long ring. We use the letters *a* and *b* and the figures 1, 2 and 3, but 4 and 5 can be added if the number of subscribers on the line requires it. We do not wish any call to exceed four rings if it can be avoided. Now, 10—2 by our code means two short rings on circuit No. 10; 14—ab1 means two long rings and one short one on line 14, and 27—a2b means one long ring, two short ones and one long on line 27. Where two long rings come together one letter might be dispensed with by having *b* stand for two long rings, leaving *a* for one, but this makes a little more to remember, and we prefer to use both letters."

Nelman F. Wing, secretary of the Farmers' Telephone Company, Grass Lake, Mich., writes as follows:

"We always use a long ring first in our code because one is liable to not notice the short rings when given first, but the long ring, followed by the short ones, attracts attention better. Each subscriber is furnished a card with the names and signals of those on his own line, like the form here shown. (Table 3.)

"If the switchboard drop number is 94, then these figures are placed in front of the number of each code signal on the line. Thus, if the subscriber's signal is one long ring, two short rings and one long ring, this is indicated by 10, and by placing the drop number 94 before 10 we have 9410, the subscriber's number. Our subscribers are educated to call by number, but not to say 'Nine thousand, four hundred and ten,' but to say 'Ninety-four, ten' or such other number as the case may be. This gives each subscriber on a party line a number in four figures. For this system drops from ten to ninety-nine should be used."

CALL CARD.

PARTY LINE TELEPHONE

EXCHANGE AT GRASS LAKE. LINE NO. 94

SUBSCRIBER.	NO.	RING.
.....	94 01	1 —
Charles Pixley.....	94 02	2 —
Harry Kimball.....	94 03	3 —
J. W. Hopper.....	94 04	4 —
George Klumpp.....	94 05	5 —
D. O. Curtis.....	94 06	1 — 1 ·
Russell Ordway.....	94 07	1 — 2 ·
Wm. E. Curtis.....	94 08	1 — 3 ·
John Heussler.....	94 09	1 — 1 · 1 —
B. F. Alger.....	94 10	1 — 2 · 1 —
Amos Curtis.....	94 11	2 — 1 ·
Harry Coppernoll.....	94 12	2 — 2 ·
Charles Nichols.....	94 13	2 — 3 ·
.....	14	3 — 1 ·
.....	15	3 — 2 ·
.....	16	3 — 3 ·
.....	17	4 — 1 ·
.....	18	4 — 2 ·
.....	19	1 — 3 · 1 —
.....	20	1 — 4 ·

Table 3.

ENGLAND'S TELEPHONE DEVELOPMENT ADMITTED TO BE FAR BELOW THAT OF UNITED STATES.

JOHN ARDRON, assistant secretary of the British Post Office in charge of telephones, in a recent interview with the London *Mail* gave some interesting information about the telephone development of London and Great Britain. His statistics were for January 1, and show that in London, with an area of 640 square miles, at the present time there are 130,000 telephones, with a constant addition of new subscribers at the rate of about 10,000 a year. Ninety thousand of the total number of London telephones belong to the National Telephone Company, and 40,000 to the London Postoffice. In Great Britain, outside of London, there are 260,000 telephones, 250,000 belonging to the National Telephone Company, and 30,000 to the Postoffice.

These figures show that the use of the telephone is far from being as extensive, in proportion to the population, as it is in America. Not only is this true of the present development, but the rate of growth is lower.

Mr. Ardron admitted that America is far ahead in telephone development. "Norway and Sweden," said he, "are ahead of us in proportion to the population, Germany is about equal, while France is behind. The United States, which has no Government service, is ahead of all."

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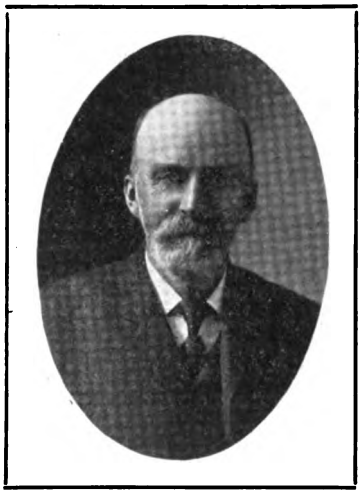
Dodging the Sub-License Contract*

How an Independent Company in Massachusetts Has Kept Clear of Bell Entanglements, and Thereby Prospered.

By W. E. Kinsman.

ABOUT ten years ago we organized an association and completed a grounded line fourteen miles long that cost $3,780. We had eighteen telephones on it. There was never seen a company of people so pleased with anything as were those eighteen subscribers with their line. They are very much the same to-day. They were nearly all farmers, and when they got their chores done they stepped to the telephone to talk with the seventeen other subscribers. All went into it to have what fun they could, telling stories, visiting, asking conundrums, and doing nearly everything a man could do over a telephone through the evening until they got tired, and one by one dropped off the line for the night. That made them so pleased with the use of the telephone that they were very enthusiastic, and at the first annual meeting it was voted to extend the line to Shelburne Falls.

Next year we began to be a little frightened because every dollar an association has in Massachusetts is held for the debts of the association. The Bell people were frightening us and we were afraid of them. In order to protect ourselves, we got incorporated. Then our friend, the representative of the Bell company, Mr. Story, came to us and said, "We want you to be a sub-licensee. We always take good care of our sub-licenseees. We do everything for them we can." He was as nice a representative as any you ever saw. You would think they loved us to death. He came to address us. He can talk. He is a smart man. At the close of the meeting he would rent us telephones for $5. The stockholders voted to turn down the proposition. Mr. Story then told a different story: "You won't amount to anything anyway. You don't begin anywhere, you don't end anywhere. You can't live. I give you just two years to fail up. You have got to get out of Shelburne Falls."



W. E. Kinsman, President, The Heath Telephone Company, Heath, Mass.

We had sixteen telephones in Shelburne Falls. They had thirty-six. "You'll have to get out of Shelburne Falls or suffer the consequences," he said. We told him we would stay and suffer. The Bell company now has forty-eight and we have one hundred and fifty-seven telephones in that town.

When we got to Shelburne Falls we were $1,300 in debt. We could not sell a single share of stock, so the directors gave their personal note for $1,300, letting it lie until the plant had paid for it. We carried that $1,300 until we could sell stock. We declared a 10 per cent. dividend. The Bell representatives say "borrowing money to pay dividends." We were paying that dividend with less than one-fourth rent. The next year we declared 10 per cent. Bell people say we were selling stock for a dividend. This created a demand for our stock, and the demand has been steady ever since.

In the meantime comes our friend, Mr. Story, again. He wants us to have a sub-license from the Bell. He told us the advantages coming to us if we would join. We turned him down. He told us we could rent the telephones at $3; came down on his price. We thought we would wait a little longer and perhaps we could get them for nothing. A year ago this winter he wanted us to come to Boston. They would pay our expenses and entertain us. "We want to show you what we have got." I have never gotten over being afraid of the Bell people. We could not possibly leave our business at home and they kept after us until about a year ago, when we met them at Greenfield. We had a session with them. We were surprised at the proposition they had to make to us to buy out their local lines on the ground that we occupied in common. We decided that we would investigate the matter and they sent engineers to appraise their property. We had another conference with them after they had made their estimate. It was tremendously satisfactory. Of all the territory they had cut out about half that we had asked for. They would sell to us and take it up in stock. But we could not extend our lines anywhere except where they said we might, and we must use their transmitters and receivers. We were to pay $1.25 a year in advance for their use. We declined to make the deal.

To show what they can do in a case like that, here is what happened in another part of their territory. There was organized a new company in the Deerfield Valley, and it occupied a few towns in Vermont, and the Bell people were also there. Their rates were $18 for each township. It was made $18 for all townships. Here is an instance where in nine towns in Massachusetts they give connections with the whole territory for $18. It is quite a reduction. They sent expert canvassers into our territory to talk with our subscribers. Well, they have just about six of our subscribers at the present time in the territory that we have lost because of the lower rates. The Bell have in our territory 248 telephones; we have 893 in Vermont and Massachusetts.

Our telephones are increasing. We have one telephone for ever 13.99 inhabitants. The Bell people have one for every 43.96 people. Taking out the two towns we have just entered, we are furnishing telephones in the ratio of one to every 12.87 inhabitants. We were never in a more prosperous condition. Everybody seems to want a Heath telephone. Our stockholders are largely our patrons, and they own a controlling interest in the company.

It may help some new company just organizing to know what we did to keep the control of our company in our own hands. About the time we organized the company there was one at Northfield. It was furnishing service at $15. The Bell people quietly bought the stock until they had a controlling interest, and they called a meeting to continue at $15. They also voted to be a sub-licensee of the Bell company. We took counsel as to how we could keep our company out of their hands, and on the face of every certificate there is a clause which gives the company the first right to buy if stock is to be sold. We sometimes exercise this right. One gentleman sold his share of stock to a neighbor. He had gotten into debt, and so sold it. We took the stock and later sold it ourselves, but it was not for this express purpose that it was put in, but the clause was put in to keep the Bell people from getting an opportunity to buy our stock.

* Editor's Note.—The article on this page is an abstract from address delivered at the recent convention of the Vermont-New Hampshire Association.

CHICAGO TELEPHONE OPERATORS DEMONSTRATE COURAGE.

FIRE broke out a few nights ago in a building very near to one of the principal exchanges of the telephone company. While many girls were at work at the switchboard the operating rooms became filled with smoke. The fire burned briskly at a distance of only a few feet from the telephone building for some hours before it was under control. Firemen came into the operating rooms of the telephone company, and were astonished to find the girls working almost as calmly as on an ordinary day. "How do these women manage to do it?" a big lieutenant asked. "It is discipline," said the manager. "I told them that I'd let them know just when it was time for them to get out, and they'll stick unless you fellows start something." "We'll not start anything with a bunch of girls like that," said the lieutenant.

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THE EDITOR'S PAGE

WHAT DOES THIS SHOW YOU?

WHEN we invited our subscribers to help us out with information for a man who wanted to know about ringing codes for rural party lines we had no idea that we were going to get close to the hearts of so many good telephone men, nor would we have quite believed that our little request would bring out so many interesting and useful schemes. Of course everyone who, in the days when he first became acquainted with algebra, has juggled with various combinations of objects to prove to himself, by getting them all together before his eyes, that an almost incredibly large number of different groupings can be made by changing the relative position of units, must realize the possibilities which are open to the maker of ringing codes. Practically, however, most telephone men probably think that the conditions of operation are such as to limit the number of truly useful and convenient codes to a comparatively small number. That this number is by no means as small as is generally believed, however, we expect to show before our friends get through with the subject. This code business is a good deal like a puzzle, and enough men have worked it out to give a very pleasant variety to the answers.

Now we probably are as unwilling to be caught moralizing as our readers are to suspect such a thing. We are willing, however, to be taken on suspicion this time for the sake of emphasizing a point suggested by these replies. In fact, it is a thing in which we are so much interested that we can't help dwelling on it. When a man has to work out a problem, and does work it out and get an answer, he is usually enough interested in his result to want to know how it stands in comparison with what has been done by others. He likes to measure up and see if he can come out ahead. If he does, it is pretty satisfying, but if the other fellow has something better it can be adopted, and that helps the business.

When it comes to the actual process of measuring up, how is the man in California going to get next to the work of his neighbor in Maine? The question is not merely how can it be done, but how can it be accomplished most quickly and easily. Do we have to wait for an answer to this question? It's an easy one, isn't it?

Now to return to the rural line rings. We still have a good big pile of letters on this subject waiting for attention and more are coming every day. Some of those which have come in most recently give information which duplicates that in the earlier responses. But every point which is new and contains a useful idea we are going to publish. We haven't space for them all in any one issue, but they are all coming. When we get through with this we shall be ready for something else. This telephone industry is big enough to supply problems to keep before every man a goodly number of things about which he would like to acquire more information than he can easily dig up for himself. Also, the men in it are big enough and bright enough to supply information on every subject that comes up. In order to bring about results in this line it is necessary for someone to start the ball rolling; then let everyone who can jump in and give a good, hearty push. In this way telephone men can be sure of getting in touch with various classes of practical work in a most thorough manner. It means a chance to get information quickly, and cheaply, too. There is no reason why these things that interest us all should not be threshed out on the pages of a telephone paper as well as in a convention. Then, too, there is the advantage that once they are printed the statements from all over the country are brought together in permanent form. They can be read at any time. There should be plenty of this sort of co-operation, and we extend to every telephone man a most cordial invitation to join in it as quickly and as often as he sees an opportunity.

HOME-MADE MONEY SAVERS.

EVERY telephone exchange suffers more or less from the use of material not perfectly fitted to its requirements. The question before every manager who purchases material is how to get the best thing for the least money. He may have a good standard to go by, but unless he checks his purchases by this standard it is worse than useless to him. The main question is not open to discussion, for everyone realizes that such a course, if intelligently and properly carried out, leads to economy. When ways and means are considered is the time that difficulties appear.

On another page of this issue is published an article describing a device built by a manager for making a certain class of tests. It seems to be valuable not merely because it gives the designer a means of comparing values, but because it gives an economical means of doing this. It required thought to design it and work to build it, but once made ready it is capable of making itself useful for a long time. The man who built it would probably say that it cost him some money, but represents about the most profitable investment to be found in his exchange. His device is essentially a labor saver, and is only one example taken from a very numerous class of such devices. The inventive exchange manager, or wire chief, can, if he will give to such matters the necessary consideration, carry out a great many lines of special work in a manner which will cause it to much more than pay for itself.

ONE VALUE OF HIGH GRADE SERVICE.

THAT a telephone company must, in the final reckoning, stand or fall by the service it gives, is receiving some very strong demonstrations in certain sections of the South just now. The organization which at the present time finds itself in difficulties so numerous, and of such a varied nature, is directed by men who are prominent in the affairs which bring them in close touch with the leading men in their territory; the company has long had the reputation of keeping in close touch with proposed legislation; in protestations of good intentions it has not been backward. Under these circumstances it must be at a considerable loss to understand why the public in general and the various official bodies appointed to look out for the public interest, including the legislatures and city governing bodies, do not now wholly conform to its wishes. Although it has strenuously opposed, by all the methods available, the entrance of competing companies into its territory, its efforts are now almost wholly useless as a means of influencing those whom it has, from one point of view, done so much to propitiate.

As this company's policy has undoubtedly been carefully laid out in advance, and skilfully pushed, its defeat must be due to some inherent fault in the fundamental plan. This fault appears to be principally that the company has failed to realize that it is conducting a business, in which it creates a product to be sold at a profit. With the arrival of competing companies the people are given an opportunity to learn that the old concern was not too particular about the quality of its goods, and was very negligent in making deliveries. The consequence is that when they can buy elsewhere they are likely to do so, and furthermore that they will do everything possible to enlarge their opportunities in this direction.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

INJURY BY LIGHTNING AT SWITCHBOARD.

A telephone company is being sued for damages by an operator who claims to have been injured by lightning while at work at a switchboard. We would like very much to know if any decisions along this line have been made. Any information with which you may favor us will be greatly appreciated. G. A. B.

WE do not know of any reported case involving an injury to an operator working at a switchboard, but there are a number of cases involving injury from lightning under other circumstances, and these cases we give below. The company is not bound to exercise so high a degree of care to protect its employees as it is to protect third persons. As to third persons, it must exercise the highest degree of care under the circumstances, while as to persons in its employ it need only be ordinarily careful. Richmond & P. Electric R. Co., vs. Reuben (Va.), 47 S. E., 834. It would be a question in this case whether the company had taken all the necessary precautions to protect operators from lightning, such as the installing of proper lightning arresters. It would also be a question in the case whether the operator had not assumed the risk of working at a switchboard under the existing conditions which she probably had every opportunity of knowing. The cases referred to follow: Lightning Pole Co. vs. Bennett, 62 L. R. A., 219; Owen vs. Portage Telephone Company, 105 N. W., 924; Martin's Administrator vs. Cumberland Telephone Co., 76 N. W., 394; Griffith vs. Northeastern Telephone & Telegraph Co., 52 L. R. A., 919; Jackson vs. Wisconsin Telephone Co., 83 Wis., 243, 26 L. R. A., 101; Southwestern Telephone & Telegraph Co. vs. Robinson, 2 U. S. App., 205, 16 L. R. A., 545; Wells vs. N. E. Telephone Co., 64 A., 648.

COURT HAS NO RIGHT TO GRANT FRANCHISE OVER HIGHWAYS IN ANOTHER COUNTY.

THE court of Appeals at Nashville, Tenn., has denied the petition of the Long Distance Telephone Company for a franchise over the Franklin Turnpike from Nashville to Franklin on the ground that the Chancery Court of one county has no right to grant a franchise over public highways in another county. The turnpike is the property of the Franklin Turnpike Company, a chartered corporation, and its road extends from one county into another. The Chancery Court at Nashville had condemned all right of way asked by the telephone company, and the Court of Appeals upheld the lower court granting a franchise in its own county, but reversed its decree in so far as it allowed the telephone company to condemn property in another county.

CONFLICTING RIGHTS OF TELEPHONE AND RAILROAD COMPANIES SETTLED IN ARKANSAS.

THE Batesville and Winerva Company was engaged in the telephone business in certain counties in Arkansas running along the east bank of the White River and upon its own right of way. This line was lawfully constructed, right of way over private land having been obtained by verbal consent of the owners, and along the highway under authority granted by section 2934, Kirby's Digest. This expressly authorizes telephone companies to enter a railroad right of way and survey and lay out their lines. Afterward the St. Louis, Iron Mountain, and Southern Railroad Company constructed its railroad along the way occupied by the telephone company, the railroad having acquired its right of way by purchase from the land owners, and vacancy of county roads. The railroad company made repeated demands upon the telephone company to remove its line from its right of way, and its demands not being complied with, it cut down and removed about thirteen miles of the telephone line. The telephone company sued the railroad company for damages and recovered, the judgment being sustained by the Supreme Court of the State, on the ground that the telephone company was not a nuisance, and that the railroad company might have prevented the building of the telephone line by injunction if it was injured.

The telephone company recovered double damages on the ground that the injury to its line was done willfully and intentionally. The court held that it was entitled to single damages only as the words "willfully" and "intentionally" implied an evil intent without a justifiable excuse, and the railroad company had an excuse in that it believed that it was lawfully entitled to remove the line. St. Louis, I. M. & S. Ry. Co. vs. Batesville and Winerva Tel. Co., 97 S. W., 660.

ONE TAX COVERS ALL.

AT St. Paul, Minn., Judge Hallam filed a decision in the case of the State against the Twin City Telephone Company, holding that the payment by the company of its 3 per cent. gross earnings tax exempts it from any other form of taxation on real estate used in the business. The action was brought to recover taxes levied on the company's property for the year 1903. The court says the case is similar to that against the Northwestern Telephone Co. decided by the Supreme Court.

Section 1035 of the Code provides that "every telephone company shall pay into the State treasury on January 1 in each year 3 per cent. of its gross earnings derived from the business within the State, which shall be in lieu of all other taxes and assessments whatever upon such company and its capital stock.

Under this statute the Supreme Court has held that real estate owned by a telephone company and used in its business is exempt from ordinary taxation.

TRANSFER OF MASSACHUSETTS TELEPHONE STOCK.

AT Boston, Mass., attachments have been filed in the Suffolk Superior Court in actions on contracts aggregating $475,000 against George A. Fernald, banker, as trustee of certain property owned by Charles W. Morse of New York. The plaintiffs in the suits are Oakes Ames, a wealthy capitalist; Arthur S. Temple, who is associated with Mr. Ames in business, and Frank A. Cutting. Mr. Ames seeks $250,000 damages; Mr. Cutting asks for $75,000, and Mr. Temple wants $150,000. The attachments were filed against Mr. Fernald merely as a means of reaching property which was in his custody.

The suits are over the transfer of some stock in the Massachusetts Telephone and Telegraph Company, a concern organized a few years ago, and which is now said to be owned by the Bell people. According to one lawyer the plaintiffs transferred their stock to Mr. Morse, relying on certain promises, which agreements he has failed to keep. A lawyer talking about the case said: "These suits show some people that Ames, Cutting, and Temple are not the ones who sold out to the Bell people."

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IN THE OPERATING FIELD

RELATIONS OF THE MUTUAL AND COMMERCIAL INDEPENDENT COMPANIES TO RECEIVE CONSIDERATION AT THE IOWA CONVENTION.

C. A. HOLLIS, manager of the Hudson Mutual Telephone Company, at Hudson, Iowa, has prepared a programme and list of questions for the session of the Iowa Independent Telephone Association on the afternoon of Wednesday, March 20, which is to be entirely given over to a consideration of the inter-dependence of mutual and commercial Independent companies of the State. Letters are being sent out over the signature of P. C. Holdoegel, president of the association, calling attention to the importance of this subject, and the desirability of having a complete discussion.

On the reverse side of each of these letters are printed some very interesting statements showing why it is to the advantage of all companies to send a representative. Attention is called to the fact that the representative will be able to acquire information during the convention which will enable him to save more than the expense of the trip through economies in the purchasing and using of telephones and other apparatus and material during the entire year. The manufacturers' exhibit is as important for every telephone company as the county fair or the State fair to the stock raiser. Not only do the representatives profit by this opportunity for direct observation of the goods which they are obliged to buy, and comparing the exhibits of the various manufacturers, but they may learn many practical points of operation from addresses by the most prominent telephone men in the State and the discussions which follow. More important than these features, however, is the necessity of each company appreciating the value of co-operation in the work of the State Association. Where the interests of one organization are so closely allied with those of its neighbors as are those of a telephone company, it is of the greatest importance that each company should be present when measures of common interest are being considered, and express its opinion by vote. In this way only can the interests of the entire State be learned and carried out.

No less than thirty-three questions relating to practical points of telephone construction and operation which will be discussed at the convention have already been prepared by Mr. Hollis, who is the State agent of the association, and this list is being mailed to all telephone companies in the State. If any telephone managers have not received this list they should write to him at once for a copy. Suggestions which will enable the committee to make the list more complete are also desired.

COLUMBUS INDEPENDENT EXCHANGE REAPS DECIDED ADVANTAGE FROM BELL FINANCIAL DIFFICULTIES.

THE reported inability of the Bell company to raise money through the attempted sale of the bonds of the parent concern is being felt in all portions of the country. One of the most important advantages gained from the lack of success in disposing of these bonds is reported from Columbus, O. The Press Post, in a recently published item, calls attention to the fact that the Central Union (Bell) company has been actively engaged in making preparations for a campaign to regain a portion of the ground lost to its competitor. A new building is being prepared, and for a long time the company has been engaged in the distribution of printed matter containing arguments intended to show up the favorable points of the Bell system. Now that the order for the curtailment of expenses has gone forth from headquarters, however, it is reported that the local company is unable to provide funds for the difficult fight which was foreseen in Columbus. Instead of making an active campaign for business, the company is said to be discharging employees. Not only is this policy said to be scheduled for Columbus, but also in many other places in the State of Ohio it is reported that new work planned by the company is to be abandoned, forces reduced and the strictest economy practised. While this policy is to be enforced by the Bell companies, owing to the orders from Boston headquarters, the Independent companies, relying upon local capital, are going ahead rapidly, meeting all the needs of the communities in which they operate.

IN HARD CASH.

What would it be worth a day to your home folks to be able to telephone and to answer calls from the second floor, and save running up and down stairs?

How much would it be worth to have noiseless means to call the police at night, within elbow reach of the bed?

How much would it be worth to have a telephone upstairs when fire breaks out on the first floor, to be able to call the fire department?

How much would it be worth to have a telephone within reach of the invalid lying in bed, so that a private talk can be had with the doctor at any hour without rising?

Do you think all these advantages, which the extension telephone arrangement gives, would be worth spending 3 cents a day for?

Surely these advantages are worth far more.

You can have an extension put in to-morrow that will cost you only 2 or 3 cents a day—and save you five or ten times that much worth of labor and worry and perhaps a great deal of money in an emergency.

Telephone the Contract Department [Main 294] and talk it over.

HOME TELEPHONE COMPANY.

An Interesting Example of Advertising Copy for Pushing Extension Set Business.

HONOLULU TO HAVE INDEPENDENT TELEPHONE SYSTEM.

ON April 26, 1905, a franchise for an Independent telephone system was granted to The Standard Telephone Company, Ltd., by the Legislature of Hawaii, and pursuant to the organic act was duly ratified by the United States Congress on June 20, 1906.

The franchise covers the entire Island of Oahu, the second in point of size in the Hawaiian group, which is 46 miles long by 26 miles broad with an area of 600 square miles, and having a population of 75,000 persons. Plans for the actual construction of the system have now been completed, marking the practical success of the organizers of the company in a fight carried on in the face of opposition as determined as that which is met in the States. The Standard Telephone Company was incorporated in February, 1901. Its president, Mr. Guy Owens, was for many years engaged in electrical construction work in Chicago, and went to the Islands in 1907, where he installed the entire electric lighting and telephone systems on five of the largest sugar plantations. In 1902 he became connected with the Standard company and in conjunction with an associate attempted to get the franchise bill through the Legislature of Hawaii in the spring of 1903. The plans were left largely in the hands of the associate, who claimed to be able to secure the necessary per-

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mission, but as his abilities failed to materialize, the attempt failed. Mr. Owens, however, decided that he was in the Islands to conduct a telephone system, and, bearing in mind the old saying, "If you want a thing done well, do it yourself," went before the Legislature a second time. By careful planning and proper tact, the members were convinced of the desirability of giving the franchise, which passed by a large majority in April, 1905.

Work on building the plant is expected to start in about three months. A large force of skilled men in all the necessary branches will be secured from the States. The company will have its own building, absolutely fireproof, of re-inforced concrete and steel construction, which will be located in the business part of the city. Preparation is being made for an initial equipment for 2,000 telephones. These are expected to include about 1,000 residence instruments, 800 business lines, and 200 rural stations. The rates for these three classes of service are, respectively, $4.00, $6.50 and $2.50 per month. The rural rates apply to all stations on lines extending more than five miles from the center of the city.

The construction work will include eight miles of underground in the business section, sixty miles aerial, all cable, in the residence section, and 100 miles of pole line, with No. 12 copper wire in the rural districts. Over 400,000 feet of cable, 125,000 duct feet of conduit, 500 miles of No. 12 copper wire and 5,000 poles will be used.

The company is capitalized for $500.000 with the following officers and directors: Guy Owens, president; D. P. R. Isenberg, vice-president; Harry Armitage, treasurer; H. E. Murray, secretary; I. C. Carter, auditor. Mr. Owens now has full control of the stock which has been issued, making him the principal owner, as well as the managing head of the company. Many Independent telephone men will be interested to know that Mr. Roy Owens, superintendent of the automatic department of the Citizens' Telephone Company, Columbus, Ohio, is a brother of the president of the Standard company. Conditions in the Islands are said to be favorable to the development of a very satisfactory business for the new company. Honolulu is only six days' travel from San Francisco, and the climate is like the month of June the year round. The agricultural exports, mostly sugar, amount to over $40,000,000 annually.

TENNESSEE SUPREME COURT TO HURRY CONSIDERATION OF NASHVILLE TELEPHONE CASE.

THE Supreme Court of Tennessee has reconsidered its former action relative to the case of the Home Telephone Company and will hear the case at this term. The Court of Appeals of that State two weeks ago handed down a decision in favor of the Independent company against the city of Nashville, the features of which have been published in THE AMERICAN TELEPHONE JOURNAL. It was believed that the Supreme Court could not take up the case until the December term, but a later decision is to the effect that it will be heard this week. The Home Telephone Company, however, does not fear the result of this case, as the State legislature has passed a bill which has been signed by the governor, denying cities and counties the right to refuse the use of streets and public roads to public utilities of a general character, under which law the city of Nashville cannot interfere with the plans of the Home Company.

AMBULANCE? NOT FOR THIS LINEMAN.

McGREAL'S ambulance, the horse steaming and blowing from a hard run, pulled up at the corner of Broadway and Harvard avenue in Cleveland the other day, where it had been reported a telephone lineman was lying broken and dying from a fall from a lofty pole, but the driver found no sign of the victim or the customary crowd, says the *Plain Dealer*.

"Stung," commented the driver. Then he spied a lineman seated high up among the cross-arms of a tall pole. It was Colin Connors, a Cleveland Telephone Company employee. "Say, what were you guys doing, stringin' me?" the driver demanded of him.

"Why, no, son," Connors drawled. "You don't think that we would do such a thing to you." Then he proceeded to calmly tell the ambulance man that he had taken a little tumble from the very pole upon which he was working. "I forgot myself, and caught hold of a live wire, that was all," he said. "How far did I fall? Only thirty feet or so."

And no end of argument on the part of the ambulance men could tempt him in. The ambulance went back empty.

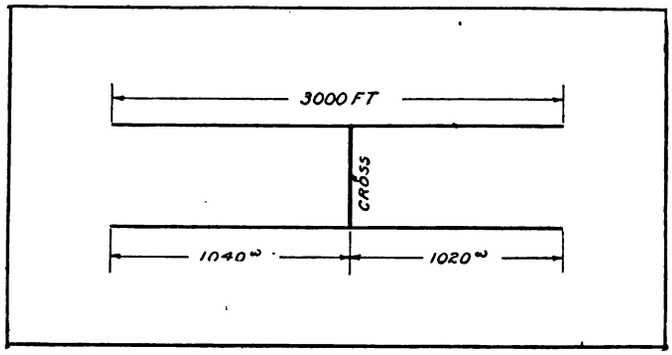
A METHOD OF LOCATING A WET SPOT IN A CABLE.

By W. B. BURKE.

TELEPHONE men who have trouble from a wet spot in a cable frequently have a great deal of difficulty in locating it. The writer has used the following method with good success in a number of cases. Measurements are taken from both ends of a pair of wires, and the distance to fault worked out by the formulas:

$$Y = \frac{C + D - B}{2},$$ which gives the resistance of the fault

from the figures obtained by taking measurements at both ends of the cable. The resistance from each end to the fault is then readily obtained by subtracting the resistance of the fault from



Conditions Existing in Cable Having Wet Spot, Location of Which is Obtained in Example Printed Below.

the loop resistance obtained in the measurement. With the resistance known, the length can be easily computed. The following table gives the letters used in computation, and following them the known figures from which a practical example was worked out:

A = total length of cable—3,000 feet.
B = total resistance of both wires—60 ohms.
C = reading in ohms at one end—1,040 ohms.
D = reading in ohms at the other end—1,020 ohms.
Y = resistance of the fault.
X = distance from one end.
X2 = distance from the other end.

From these figures it is clear that the resistance of the fault will be:

$$Y = \frac{1040 + 1020 - 60}{2} = 1000.$$

The resistance from each of the ends to the fault will be, respectively:

$$1040 - 1000 = 40$$
$$1020 - 1000 = 20.$$

From these figures may be obtained the distances, as follows:

$$X = \frac{3000 \times 20}{20 + 40} = \frac{60000}{60} = 1000 \text{ feet, distance from one end.}$$

$$X_2 = \frac{3000 \times 40}{40 + 20} = \frac{120000}{60} = 2000 \text{ feet from the other end.}$$

In this case the resistance of the wires in the cable was 10 ohms per 1,000 feet. Care should be taken not to take too long in obtaining the resistances from the ends of the cable, as the passage of the current, in case of a wet spot, is extremely likely to cause a variation in the resistance of the fault.

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QUERIES

TRANSMITTER TROUBLE (827).

Please tell me why a local battery transmitter and a local battery induction coil with the regulation impedance coils for 10-volt work will not talk on a 10-volt storage battery circuit. Cut out the impedance coils and the transmitter talks all right, but it is necessary to have the coils in circuit. PENNA.

Your question is rather indefinite, so much so that we cannot say what might be done. If you will give more definite data, such as the ampereage of your storage battery, the resistance of your impedance coils, the resistance of your induction coil, the common battery system, to which you refer, and why you desire to operate a local battery instrument on a storage battery equipment, we will be pleased to advise you further.

The probability is that your impedance coils are of a sufficiently high resistance to cut down your current supply to such a point as will interfere with the transmission. Your transmitter would not last a very long time with the entire current supply of the storage battery passing through it. That is the reason some impedance is necessary.

Kindly let us hear further from you in relation to this question.

CONNECTIONS FOR LIGHTNING ARRESTER (828).

Will you kindly explain how to connect up the No. 400 lightning arrester, sold by Julius Andrae & Sons Co.? We are having a dispute as to the method of using it on grounded lines. B. R. G.

The following information comes from the company you mention:

In connecting up the No. 400 lightning arrester, the center, or long carbon block, should always be connected to ground for the purpose of affording to the lightning a ready path which will carry it to ground, instead of to the telephone instrument. On full metallic lines (Fig. 828*b*), one line should be connected to one outer carbon block and the other to the other outer carbon block. These two blocks should then be connected at their opposite ends to the outer binding posts of the telephone. This makes a complete connection through the two outside carbon

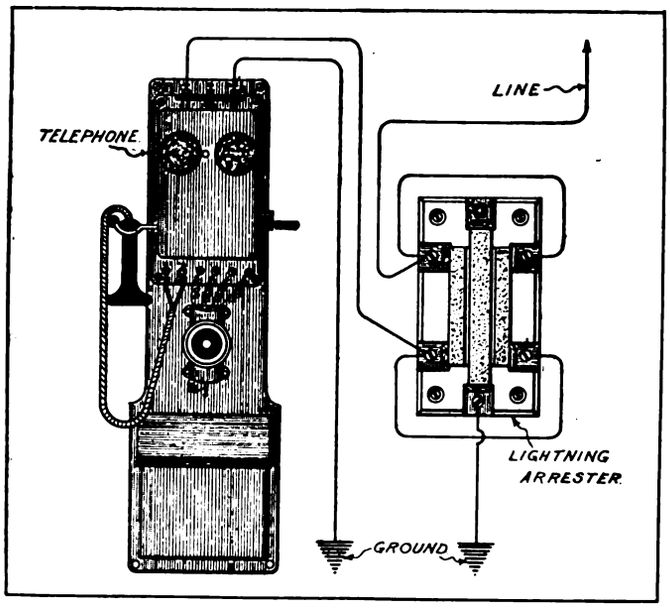

Fig. 828a.

blocks from line to telephone on each side, while the high tension current created by lightning will jump the air gap between the outside blocks and the center, thus taking a short path to ground instead of burning out the telephone.

On grounded lines the line wire should be connected to both of the outside carbon blocks at one end. These blocks should both be connected at the other end with one side of the telephone. The center carbon block and the other side of the telephone should be connected to ground. This arrangement is shown in Fig. 828a.

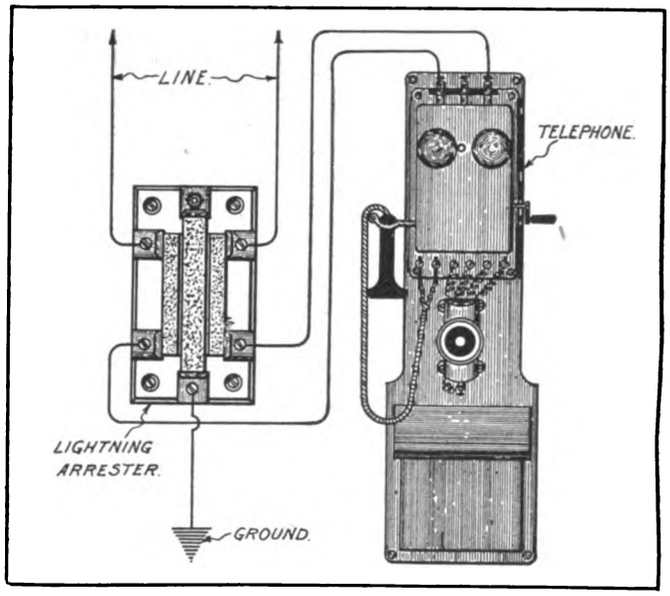

Fig. 828b.

The whole purpose of the No. 400, or any other lightning arrester, is to offer to lightning an easy path to ground. If the line were connected direct to ground it would offer such a path, but would also ground the telephone, which of course would render it inoperative. The next best thing, therefore, is to ground something that does not quite come in contact with the circuit of the line and then place this grounded electrode in as close proximity as possible to the electrodes connected to the line without touching them. It is always advisable to offer as large a surface as practicable, consequently the large blocks in the No. 400 lightning arrester which are used to make the instrument efficient in this respect.

COMPOSITION OF WIPING SOLDER (829).

What proportion of tin and lead do the manufacturing companies put in wiping solder? H. F.

The proportions of tin and lead in solder vary with the different manufacturers. However, the more common proportion is 60 per cent of lead to 40 per cent tin. None of the manufacturers will positively state the proportions they use. They will very freely send you a sample of the solder, but they refuse to divulge their formulas, else all might make equally as good. The only solder the proportions of which the writer can positively stand on, is "half and half," and even in this case we are simply accepting the manufacturer's word for it.

COMPARISON OF OAK AND LOCUST INSULATOR PINS.—(830)

Since the publication in our issue of February 2 of the report of tests made by the U. S. Forest Service on oak, locust and elm insulator pins there has been much discussion of their comparative merits. The Editor would like to hear from practical men who are willing to give their experience with pins made of any of these woods, and especially from those who are able to make comparisons.

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THE DEADLY PARALLEL

AUTOMATICS VS. LEVERS

With GRAY PAY STATIONS you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

GRAY TEL. PAY STATION CO.

HARTFORD, CONN.

OUR '07 CATALOGUE SENT ON REQUEST

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For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

FOR SALE CHEAP—100 series telephones with Ericsson transmitters and Holtzer-Cabot generators. Good as new. Address R. Valentine, Pres., Independent Telephone Ass'n of Wisconsin, Jamesville, Wis. 783

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WANTED—Position by first class all-around telephone man with twelve years' experience. Small Independent company operating rural lines preferred. Married, temperate and trustworthy. Will go anywhere. Address Box 784, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 784

WANTED—First class wire chief for common battery plant, New York State. None but first class man need apply. Address, stating experience and references, Box 785, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 785

WANTED—A young telephone man, college graduate preferred, in the literary department of successful concern. Salary to start will necessary be small, but work offers exceptional opportunity for growth. Address, Box 790, care AMERICAN TELEPHONE JOURNAL, 100 William Street, New York. 787

CONTRACT AGENT VACANCY—Permanent position for a good man. State age, married or single, experience and salary expected. Address, Johnstown Telephone Co., Johnstown, Pa. 788.

WANTED---Continued

WANTED—Young college graduate, with some operating or traffic experience, for special work. State full particulars, education and experience. Address, care AMERICAN TELEPHONE JOURNAL, 100 William Street, New York. 789

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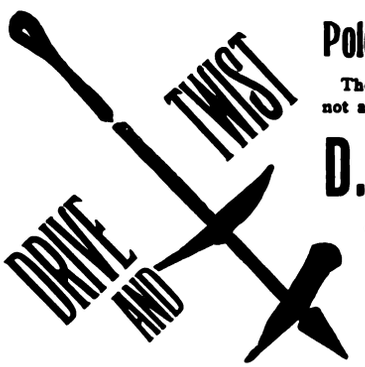

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TELEPHONE PATENTS

ANNUNCIATOR.

Harry J. Kusel, Chicago, Ill., patents (No. 842,565; dated January 29, 1907; filed November 20, 1905; serial No. 288,119) and assigns to the Williams-Abbott Electric Company, Cleveland, O., an annunciator drop.

This patent covers a switchboard drop with a removable field. The winding is slipped upon the core and fastened by a spring catch working in a slot cut into the core. In order that the coil may be separated from the core whenever desired, the armature is made in two pieces, one of which is rigidly locked to the armature lever, while the other may be unlatched and turned upward upon a pivot in the first to leave the end of the magnet fully exposed.

INSULATING RING AND BRACKET.

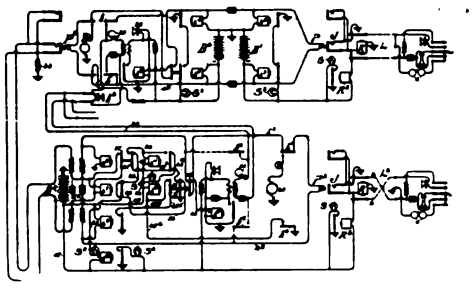
Frank B. Cook, Chicago, Ill., patents (No. 842,301; dated January 29, 1907; filed December 28, 1905; serial No. 293,662), an insulating ring and bracket.

This patent covers a combination insulating ring for "jumper" wires and bracket for securing terminal blocks on distributing frames. The entire device is formed up out of one piece of sheet metal suitably stamped into shape and perforated to permit of the making of necessary fastenings. After the ring has been formed it is covered with soft rubber, which is then heated and vulcanized, giving it a permanent insulating covering.

TRUNKING SYSTEM.

William W. Dean, Chicago, Ill., patents (No. 842,178, dated January 29, 1907; filed January 22, 1903; serial No. 140,166) and assigns to the Kellogg Switchboard and Supply Company, Chicago, Ill., a telephone trunking system.

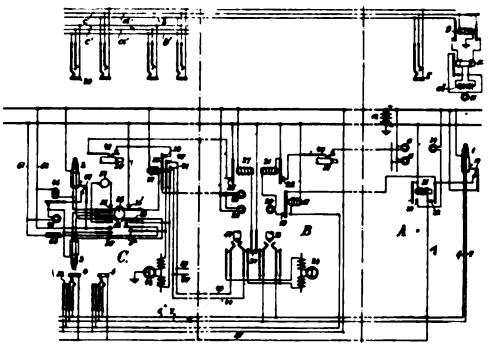
In the trunk circuit there is provided an auxiliary relay r^{13}, which is in the first instance operated on the depressing of ringing key k^4 when current from battery B^3 flows through the relay, and then by conductor 40*a* to spring k^4 to ground. Battery from the A office flows over the trunk line and through high resistance trunk relay r^7. Although supervisory relay r^5 is operated through the grounded retardation coil 34, as soon as the A operator inserts plug P^2, supervisory relay r^4 is not



actuated, while high resistance relay r^7 is in the battery circuit, and consequently lamp S^3 remains lighted to indicate that the called subscriber has not yet responded. Ringing lamp S^4 is now lighted from battery B^1 through normal contact and spring of locking relay r^{11} and forward contact and spring 51 of relay r^{13} to ground. When the subscriber answers tip relay r^5 is operated by current flowing out over the sleeve strand of the line, and back through tip relay r^5 to ground. The operation of this relay short circuits high resistance trunk relay r^7, and allows supervisory relay r^4 at the A position to be actuated. Spring 57 of relay r^5 closes the circuit of locking relay r^{11}, causing it to operate and open the circuit of ringing lamp S^4, thus indicating to the B operator that the subscriber has responded. During conversation battery B^1 at the A office furnishes current to line L, while battery B^2 furnishes current to the line L^2. When the subscriber on L^2 hangs up tip relay r^8 is de-energized and the resistance of relay r^7, thus reintroduced, causes the supervisory signal S^3 to be illuminated. The withdrawal of plug P^2 de-energizes the trunk relay, causing the disconnect signal S^6 and pilot signal S^6 to be lighted, owing to the actuation of relay r^{12}.

TELEPHONE SYSTEM.

Johan Anton Aven, Stockholm, Sweden, patents (No. 837,894, dated December 4, 1906; filed August 22, 1905; serial No. 275,-



252) and assigns to Deutsche Telephonwerke R. Stock & Co., G.M., B.H., of Berlin, Germany, a telephone system.

This patent covers a method of distributing telephone calls which is an interesting example of a certain type of European telephone engineering.

Three separate switchboards are employed: one designated b. the letter A being called the "annunciator" board, where calls are received; the apparatus at B being for an "inquiry" board, where the operator obtains from the subscriber the number of the desired line, and at C, known as the "connecting board," the connection is completed. When the subscriber calls his line signal 11 is illuminated, and the A operator inserts plug 1 connected to apparatus at the B board. In selecting a plug she chooses one associated with a lamp such as 15, which is illuminated, showing that the B operator is free to receive a call When the plug 1 is removed from its seat the contact 17 is closed, actuating signal 20 at the B position and relay 21, which puts out the signal 15 at the A position, indicating that the B operator is busy. The B operator on receipt of the signal depresses listening key 13, and takes the details of the call. She immediately afterward depresses her order key 14, leading to the telephone set of the C operator, whose idle condition is indicated by the fact that lamp 25 is illuminated. On receipt of the order the C operator inserts plug 3 in jack 4, thus connecting it by means of wires 6 and 7 with plug 1 and jack 8 associated with line of the calling subscriber. She also tests the line of the desired subscriber, such as 29, witth plug 2, and if it is idle inserts the plug, completing the connection. The lamp 20 at the B position is extinguished by the operation of relay 18 through circuit closed at point 52 of jack 4, indicating that the C operator has completed the connection. The armature of re-

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PATENTS—Continued.

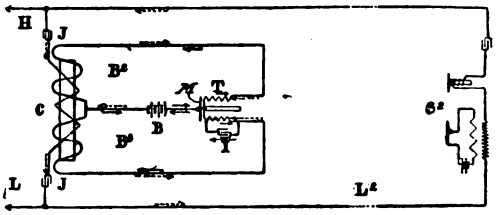
lay 21 returns to its back contact, illuminating signals 15, 16, showing the readiness of the B operator to receive another call.

Plugs 50 and 51 are inserted as long as the operator is in place. When they are removed the lamps are extinguished, indicating that no calls should be switched to the corresponding position. A supervisory signal is given through the actuation of relays 46 and 31, controlling lamps 45 and 34 respectively, giving simultaneous signals for disconnection to A and C operators.

TELEPHONE RELAY.

Nathaniel G. Warth, Columbus, O., patents (No. 845,282; dated February 26th, 1907; filed April 23d, 1906; serial No. 313,192) a telephone relay.

The object of this invention is to provide a repeater system in



which the relay device is in a local circuit, for the purpose of maintaining a balanced condition regardless of the relative lengths of lines at each side of the repeater circuit. By the arrangement described it is proposed to make a repeater which shall be capable of being used on composited lines, and which will have a receiver irresponsive to the current set up by the transmitter of the device, thus doing away with howling on an unbalanced line.

Across the line is bridged the secondary of an induction coil *C*, in series with condensers *J* when necessary for composite work. This induction coil has a split primary, to which are connected the receiving and transmitting elements. Primary circuit B^2 B^3 contains the battery transmitter *M* and receiver *T* and condenser *I*. The receiving element has two windings, and the battery current flowing through them produces a neutral magnetic state. In order, however, that the receiver shall not be neutral to incoming alternating currents the coil on one side is shunted by condenser *I*. The action of the currents of the device is indicated by the directions of the arrows, the primary currents being represented by the solid, and the secondary currents by the broken arrows. In connection with the receiving element of the repeater a permanent magnet is employed for creating a magnetic field for sensitization.

RECEIVER.

Louis Steinberger, New York, N. Y., patents (No. 838,362; dated Dec. 11, 1906; filed Jan. 16, 1905; serial No. 241,251) a receiver.

The instrument described in this patent is of the bi-polar type. The shank of the receiver is constructed of electrose or some other insulating material, and expanded at its forward end to form the rear half of a spherical chamber for the magnet coils, etc. The outside of this expanded portion is cut to form a shoulder, the forward part of which is threaded to receive a fibre cap, and the rear portion of which is threaded to take corresponding threads of a metal case, which when screwed into position butts against the outside of the cap. This metal case is retained at the rear by an insulating cap, which is threaded to screw over the fibre coil, and provided with a rim or shoulder which extends for some distance along the outer surface of the metal.

SELF-HEATING SOLDERING COPPER.

Roy Williams Marvell, Baltimore, Md., patents (No. 834,313; dated October 30, 1906; filed March 17, 1906; serial No. 306,637) and assigns by direct and mesne assignments to the Bennett-Marvell Manufacturing Company, a corporation of Delaware, a self-heating soldering copper.

The inventor provides for this soldering copper a hollow metallic handle adapted to be filled with gasoline. This is connected with the soldering point by a hollow tube which contains a wick. Midway between the handle and the point is inserted a casting, in which is mounted a needle valve for the purpose of regulating the supply of fuel. Below this casting is a cup which may be filled with fuel, either from an external source, or through drip openings above the head. The heat from the burning fuel in this cup causes the vaporization of the fuel in the body of the tube. This is ignited at a cylinder provided with suitable openings directly back of and communicating with the hollow rear portion of the soldering point. The front portion of the soldering point is made solid, in order that the heat may be better retained.

FUSE MOUNT.

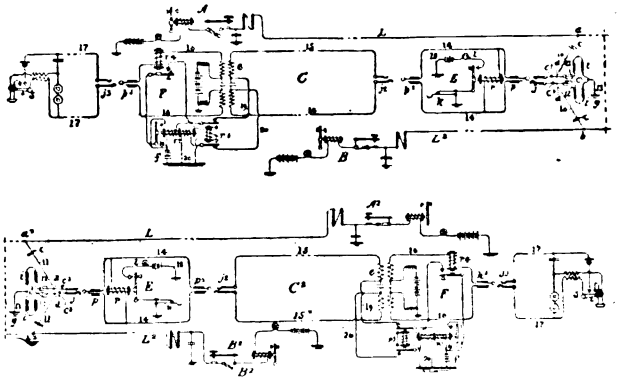
Charles E. White, Chicago, Ill., patents (No. 842,738; dated January 29, 1907; filed April 19, 1906; serial No. 312,687), and assigns to Frank B. Cook, Chicago, Ill., a fuse mount.

This patent covers a combination of terminals, with a spring member for retaining in position a tubular fuse. The ends of the fuse are inserted in openings in the terminal strips connected in the line circuit, and the action of the spring mounted adjacent to one of the terminals keeps the fuse in position and secures a good electrical contact.

COMPOSITE TELEPHONIC AND TELEGRAPHIC CIRCUIT.

George M. Yorke, New York, N. Y., patents (No. 845,157; dated February 26th, 1907; filed January 7th, 1907; serial No. 351,231) and assigns to the American Telephone & Telegraph Company, New York, N. Y., a composite telephonic and telegraphic circuit.

In the accompanying drawing a complete circuit is shown in a divided form for the sake of convenience. Line conductors *L* L^2 extend between pairs of terminal telegraph stations *A B* and A^2 B^2 at which they are grounded. These stations are equipped with the apparatus usual in composite systems. Conductors 10 and 11 bridge the telegraph lines, and extend to telephone stations *C* C^2. At each of these telephone stations equipment for a toll cord circuit, inter-office trunk and subscriber's line is shown in outline. The inductance coils *i*, condenser c^2 and



c at each station are designed in such dimensions and connected to the lines and ground *g* such a way as to prevent interference between telegraphic and telephonic currents. Under the terms of the present invention the two capacities *c* c^2 of two microfarads each, or jointly one microfarad, are connected between lines *L* and L^2, at *a* a^2 and *b* b^2, and earth at *g*. This increases the total capacity of both lines by only four microfarads, providing an arrangement which allows effective telephonic transmission without making the working of the telegraph lines sluggish.

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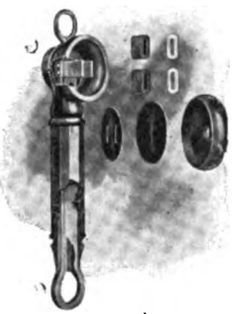

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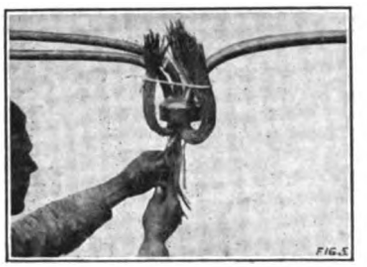

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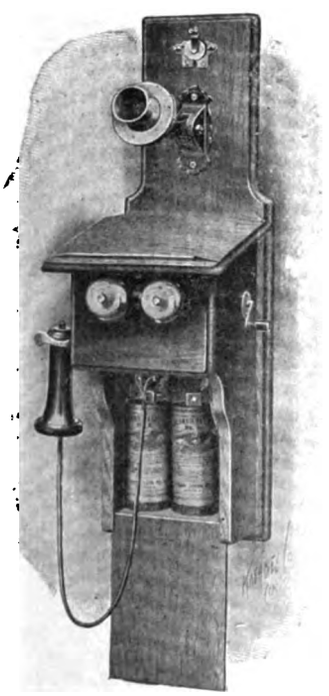

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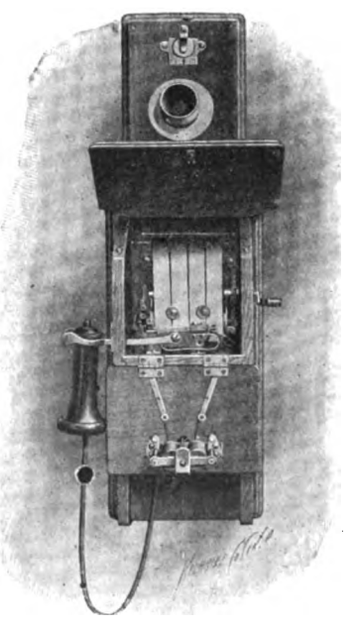

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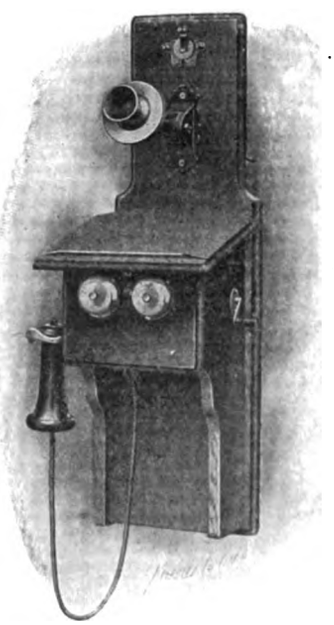

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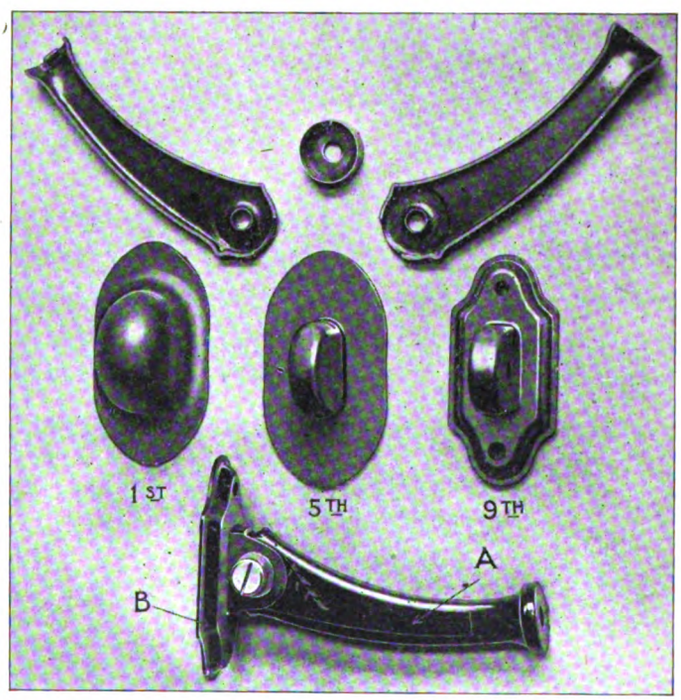
THE IMPROVED TRANSMITTER ARM MADE BY THE STROMBERG-CARLSON COMPANY.

A TRANSMITTER arm made of cold drawn steel of special temper for deep drawing, which presents some interesting features introduced as improvements over earlier types is now being made by the Stromberg-Carlson Telephone Manufacturing Co., Rochester, N. Y.

The base is made in nine operations, beginning first with a form like No. 1, which is drawn by degrees into shapes approaching that of the finished article. In the illustration are shown the forms at the end of the fifth operation and when completed. A base of this design is used in order to produce a rigid support that will not become loose when adjusting the transmitter arm to the desired position.

The arm consists of three punchings, a right and left side, and a formed cap on the transmitter end, which is spun over the two sides to hold them together. The opposite end is held by a steel ferrule riveted in place, which also acts as a fulcrum for the arm. This construction produces a light hollow arm that can not be bent or broken.

The transmitter arm is subjected to a great deal of abuse and being the most prominent appendage on a telephone, is often used for a handle before the instrument is placed on the wall. It therefore becomes almost a necessity that such parts shall be indestructible during transit and in actual service. Transmitter arms of this improved design are used with all series and bridging type wall telephones manufactured by the Stromberg-Carlson Company.



Parts of New Stromberg-Carlson Transmitter Arm.

MR. H. C. SLEMIN, formerly of the engineering and sales departments of the Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y., has been appointed advertising manager in place of Mr. J. O. Oliver, who has joined the sales organization.

JULIUS ANDRAE & SONS CO., Milwaukee, Wis., announce that the well known "Giant Telephone" has been given two or three improvements recently, and its manufacturers are now furnishing it in either the Central Energy type, the Compact type or the Backboard type.

The "Giant" was among the very first telephones to be placed on the market, and its history is identified very closely with that of the early Independent telephone movement.

THE WESTON ELECTRICAL INSTRUMENT CO., Waverley Park, Newark, N. J., has issued under date of January, 1907, Bulletin No. 7, describing its electroplaters' voltmeter, model 131. This is a new instrument designed to meet the special requirements of an electroplating establishment. As is well known, in electroplating work the amount of current consumed in the bath is governed by the quantity of the work which is being done, and the current flow is of course dependent upon the voltage. Too much current causes the work to be burned, and too little current gives a thin deposit which comes off when buffed. It is therefore important to keep the voltage at exactly the proper value during the entire process. This voltmeter when properly used makes it possible to do away with the necessity of relying upon the guessing ability of the operator, thus improving the efficiency of the plants and securing uniformity on various classes of work.

Owing to the high cost of furnishing each tank with a proper voltmeter, platers have often hesitated to equip their plants for this method of regulation, but the Weston company has in its new instrument overcome the necessity for having a voltmeter at each tank. Associated with the voltmeter, which is mounted in an air-tight waterproof case to protect the internal mechanism from the action of acid fumes, is a small wooden switchboard carrying fifteen binding posts and a fourteen point switch. One of the binding posts, marked +, is to be attached to the positive side of the plating generator while each of the others is to be attached to the cathode side of a tank. The voltmeter is then connected to any desired tank simply by the manipulation of the switch.

The illustrated bulletin describing this instrument and full information concerning the methods of using it, costs, etc., may be obtained by writing to the company.

THE CALCULAGRAPH CO., 1437 Jewelers Bldg., New York City, has just issued a bulletin calling attention to the advantages of the calculagraph as an aid to the building up of a cost accounting system. Several interesting suggestions relating to its use in connection with a card system of recording labor point to the increased accuracy and flexibility of such a plan over some of the older methods. The company is prepared to send this bulletin and more detailed suggestions to interested persons.

FORT WAYNE ELECTRIC WORKS, Fort Wayne, Ind., has a booklet "Summer Comforts" for distribution. It illustrates and describes telephone booth fan motors. These are a delightful innovation appreciated by every user of a public booth pay station, and help get the nickels and dimes.

ELECTRIC GOODS MANUFACTURING CO., 115 Purchase street, Boston, Mass., is distributing a March calendar. "There is never much good in 'good enough,' Bill says," is the catch phrase, and it's a pretty good motto, and one the "House of the Four Circles" has the reputation of living up to. The calendar mentions electric fans for summer requirements. It is a subject telephone managers ought to be thinking of about this time.

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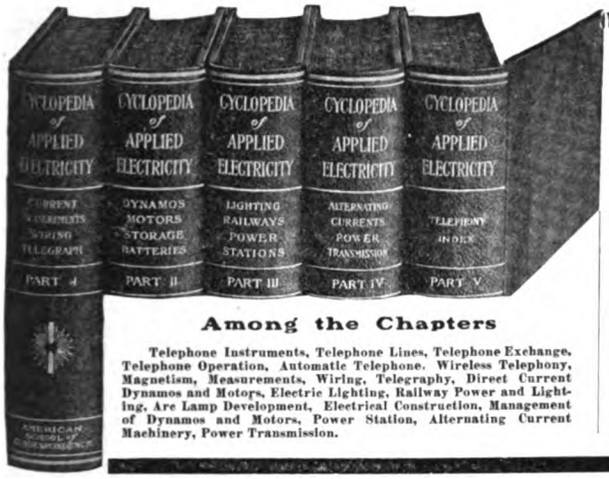

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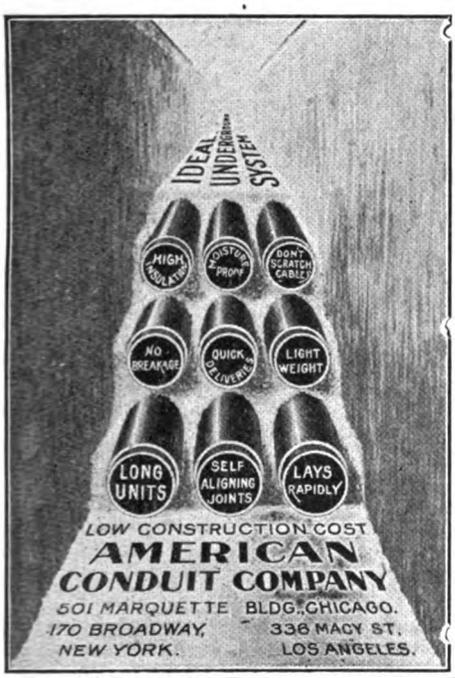

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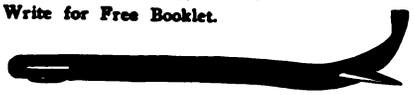

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THE WEEK'S MESSAGES

NEW COMPANIES.

COLONA, COL.—A new Independent telephone company, to be known as the Uncompahgre Telephone Company, has been organized to build a line from Colona to Montrose. Among those interested in the enterprise are A. R. Walker and B. Brower.

FREEPORT, ILL.—Articles of incorporation have been filed by the Northwestern Telephone & Telegraph Company. It has an authorized capital stock of $30,000, and the incorporators are C. B. Cheadle, Frank Zinnel and B. A. Hendrick.

MASCOUTAH, ILL.—The Southern Illinois Long Distance Telephone Company, Mascoutah, Ill., has filed articles of incorporation. It has an authorized capital stock of $2,500, and the incorporators are G. F. Wembacher, H. V. Leitig and C. R. Harris.

PONTIAC, ILL.—The Independent Home Telephone Company has been incorporated with the following officers: President, F. G. White; vice-president, J. A. Marshall; treasurer, R. F. Bradford; secretary, S. E. Sims; attorney, H. G. Greenebaum; general manager, A. J. Vernier. About $25,000 has already been subscribed, and it is the organizers' intention to make the company a strictly home concern.

WOLF LAKE, ILL.—The Preston-Union Telephone Company has been organized, and it is its intention to construct and operate lines between Wolf Lake and Grand Tower. The following officers have been elected: Thomas Adams, president; E. G. Spring, vice-president; Henry Brown, treasurer; H. C. Wolfe, secretary.

MUSKOGEE, I. T.—Articles of incorporation have been filed by the Oklahoma State & Telephone Company, the capital stock being placed at $100,000, all of which has been subscribed. The incorporators are G. T. Berry, A. W. Shulthis, C. L. Thompson, G. Makon and others.

IOWA FALLS, IA.—The Iowa Falls, Ellis & Buckeye Mutual Telephone Company has been incorporated with a capital stock of $3,500.

IOWA, LA.—The farmers and citizens of Iowa, La., have organized a telephone company to be known as the Iowa Telephone Company, Ltd. J. F. Denizen has been elected president, and work on the system will be commenced at once.

DETROIT, MICH.—Incorporation papers for the Interstate Long Distance Telephone Company, with a capital stock of $15,000,000, have been filed at Lansing. The new company will have central offices in Detroit, and it has been organized for the purpose of building a long distance telephone system throughout Michigan, connecting with the various Independent systems of Michigan, Ohio and points east and west. Work will be commenced immediately on sixty telephone circuits, embracing more than 3,000 circuit miles of wire, and it is expected that $1,500,000 will be expended in construction work during the coming season. The directorate of the new company will also compose part of the directorate of the Home Telephone Company, which is constructing the Independent system in Detroit.

PURCELL, MO.—An Independent telephone company has been organized by the farmers residing in the north and west of Purcell, whose intention it is to build lines throughout that section, connecting with the Home exchange at Purcell. The line will be about twenty miles in length, and the following officers have been elected: Jos. Herger, president; H. McFerrin, treasurer; J. C. Ross, secretary.

FARMINGTON, MONT.—The Farmington Co-operative Telephone Company has been incorporated with a capital stock of $6,000, divided into four hundred shares. The directors for the first three months are H. R. Thompson, R. H. Wright and Ben Bollerud. It is the intention of the new company, which now has twenty-six telephones connected to a central station at Farmington, to construct lines to Choteau, Collins and Conrad.

MARTVILLE, N. Y.—Articles of incorporation have been filed by the Martville and Bethel Telephone Company. The capital stock is placed at $500, and the directors are Morris Palmer, Harry Eno and Irving Green, all of Martville.

OXFORD, N. C.—The Granville Telephone Company has been incorporated with a capital stock of $50,000. Among the incorporators are W. C. Currin, S. H. Jones, R. T. Critcher and others.

DELTA, O.—The Cass County Telephone Company has filed articles of incorporation. It has an authorized capital stock of $9,750, and the incorporators are W. W. Briggs, E. F. Briggs, D. B. Raker, F. S. Harmon and F. Briggs.

NEW RIEGEL, O.—An Independent telephone company, to be known as the New Riegel Mutual Telephone Company, has been organized, and the following officers elected: President, Lewis J. Huss; vice president, Charles M. Warner; secretary, B. R. Miller; treasurer, Stephen Pfeiffer.

PANDORA, O.—The Pandora Mutual Telephone Company, Pandora, has been organized by John T. Mallahan and others.

PATASKALA, O.—Articles of incorporation have been filed by the Pataskala Farmers' Telephone Company. It has a capital stock of $10,000 and the incorporators are F. B. Headley, J. O. Pryor, C. L. Ward, W. L. McCormick and D. D. Snider.

SHINROCK, O.—The Erie County Mutual Telephone Company has been incorporated with a capital stock of $10,000. F. J. Groves and others are among the incorporators.

TOLEDO, O.—The Capital Contracting Company, of Toledo, has been incorporated with a capital stock of $30,000 by Clement Carpenter, J. A. Barber, G. M. Hannon, Chas. E. Chittenden and R. W. Kirkley. It is the company's intention to construct telephone plants in some of the smaller towns in the middle west, and it is understood that Independent telephone men are largely interested in the enterprise.

WAYLAND, O.—The Paris Telephone Company, Wayland, has filed articles of incorporation. The capital stock is placed at $10,000, and the incorporators are J. M. Hurd and others.

CASHION, OKLA.—Articles of incorporation have been filed by the Interurban Telephone Company, which will start business with a capital stock of $500. The incorporators are H. N. Murray, of Cashion; Edward Owens and P. T. Beutler, of Lockridge. The company will operate lines between Cashion and Lockridge.

DELHI, OKLA.—The Delhi Telephone Company, with a capital stock of $4,977.50, has been incorporated by G. W. Johns, W. T. Blair, L. H. Roach and L. R. Gibson.

WOODWARD, OKLA.—An Independent telephone company, to be known as the Little Reservation Telephone Company, has been organized, and it is its intention to construct a line from Woodward north to the Cimarron River.

AZLE, TEXAS.—The Azle Telephone Company, of Azle and Fort Worth, has been incorporated with a capital stock of $2,000 by the following incorporators: Joseph Fowler, J. W. Walker, H. N. Grigsby, W. B. Kitchens and others. Lines are to be built to Austin and at Fort Worth connections will be made with the Fort Worth Telephone Company's wires for long distance service.

HEREFORD, TEX.—Articles of incorporation have been filed by the Hereford Telephone Company. Its capital stock is placed at $16,000, and the incorporators are C. J. Bain, R. H. Hemley, J. Carter and J. H. Beach.

WEAVER, TEXAS.—The Weaver Telephone Company has filed articles of incorporation. The capital stock is given as $12,000 and the incorporators are H. B. Davidson, A. W. Sparks, Jr., and J. S. King.

NARROWS, VA.—The Giles County Mutual Telephone Company has been incorporated with a capital stock of $5,000, and the following officers and directors elected: H. W. Hale, president; W. O. Coburn, treasurer; E. W. Hobbs, general manager; M. F. Brown, F. W. Gearheart, T. M. Guinn, J. H. Woolwine and J. E. Hopkins, directors.

CLEAR LAKE, WIS.—An Independent Telephone Company, has been formed by local capitalists at Clear Lake, whose intention it is to build lines in the village and surrounding country. The capital stock is placed at $5,000.

JOHNSON CREEK, WIS.—The Rock River Telephone Company, Johnson Creek, has been incorporated with a capital stock of $10,000. Among the incorporators are W. A. Christians, E. A. Seitz and E. L. Christians.

KEWAUNEE, WIS.—The Montpelier Telephone Company has been incorporated with a capital stock of $1,000, and the incorporators are John Zitler, William Goetsch, Albert Goetsch and others.

PRAIRIE DU SAC, WIS.—Articles of incorporation have been filed by the Farmers' Mutual Telephone Company. It has an authorized capital stock of $5,000, and the incorporators are Edwin Steidtmann, Henry Thoelke and Fred Waffenschmidt.

VEGREVILLE, ALB., CAN.—The Vegreville & Northern Telephone Company has been incorporated for the purpose of constructing an Independent telephone system in this town. Address F. W. Irwin, or S. A. Richardson, both of Vegreville, Alb.

FRANCHISES.

GRAFTON, N. D.—The city of Grafton has granted the North Dakota Independent Telephone Company both a local and long distance franchise. The company is now building a line from Minto to Grafton, and will later extend this line to the international boundary to meet one which is being constructed by the Canadian Government.

HURON, O.—A twenty-five year franchise for the Erie County Mutual Telephone Company has been applied for by Mr. Hine of Shinrock.

FINANCIAL.

PARIS, ILL.—The Mississippi Telephone Company, which has changed its location from Marshall to Paris, has increased its capital stock from $125,000 to $400,000.

DALEVILLE, IND.—A four per cent dividend has been declared by the Daleville Telephone Company on last year's business.

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CHICAGO, ILL.

Am. Tel. Journal

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THE WEEK'S MESSAGES

MONROE CITY, IND.—The capital stock of the Wabash Home Telephone Company has been increased from $25,000 to $40,000.

DUNNELL, MINN.—The Dunnell Telephone Company after the first six months of business has declared a 10 per cent. dividend and a five per cent. reserve fund. Extensive additions to its system are planned by the company.

TARBORO, N. C.—The Carolina Telephone and Telegraph Company, of which W. H. Powell is president, has increased its capital stock to $25,000.

BELLEVUE, O.—The capital stock of the Bellevue Home Telephone Company has been increased from $10,000 to $100,000.

COLUMBUS, O.—The regular quarterly dividend of 1 per cent. has been declared by the Columbus Citizens' Telephone Company.

GALLIPOLIS, O.—The Home Telephone Company, of Gallipolis, has increased its capital stock from $20,000 to $30,000.

NEW LEXINGTON, O.—The Citizens' Independent Telephone Company has increased its capital stock from $50,000 to $100,000.

MANSFIELD, TEXAS.—The Mansfield Telephone Company has increased its capital stock from $16,000 to $25,000.

BARRON, WIS.—The capital stock of the Barron County Telephone Company has been increased from $22,500 to $50,000.

KNAPP, WIS.—The capital stock of the Knapp Telephone Company has been increased from $5,000 to $10,000.

WALWORTH, WIS.—The stock of the Eureka Telephone Company, Walworth, has been increased from $5,000 to $15,000.

COMBINATIONS.

TROTTER, KY.—The Trotter Telephone Company, which now has connections with Hardinsburg, Palmyra, Lavonia, DePauw, Salem, Milltown and other places in Harrison and Washington counties, has effected a consolidation with the Rural Telephone Company at Fredericksburg.

TECUMSEH, NEB.—The Johnson County Home Telephone Company has acquired the Johnson County Telephone Company, the latter being the Smartville Company.

OSWAYO, PA.—The Oswayo Valley Telephone Company, which operates at Oswayo, Millport, Shinglehouse, East Sharon and other places, has been acquired by the Bolivar Telephone Company.

ELECTIONS.

REDLANDS, CAL.—The following officers and directors have been elected by the Southwestern Home Telephone Company: K. C. Wells, president; A. Gregory, vice-president; J. H. Breckinridge, secretary; Henry Fuller, C. H. Bigelow, J. F. Dostal and C. O. Barker, directors.

FORRESTON, ILL.—At the annual meeting of the Farmers' Mutual Telephone Company the following officers were elected: H. DeWall, president; C. Gastmund, vice-president; Henry Drake, treasurer.

DARMSTADT, IND.—At a meeting of the Daisy Telephone Company, Henry Sheakel was elected president, and Fred Schafer, secretary and treasurer.

GARRETT, IND.—The following directors have been elected by the Garrett Telephone Company: John Mager, W. W. Sharpless, John Brechbill, J. R. Lantz, H. W. Mountz, Emil Hill, L. D. Moore, Leo Mager, W. H. Coffinberry, F. B. McCullough and C. N. McCullay.

FARMERSBURG, IND.—The Farmersburg Mutual Telephone Company has elected the following directors: T. H. Kendall, Emery Jennings, A. Curry, A. J. Akers, T. Hook, C. O. Bowne and Harvey Lewis.

GILEAD, NEB.—The Gilead Home Telephone Company has elected the following officers: J. L. Magill, president; H. J. Deaver, vice president; J. W. Deaver, secretary; Frank Nelson, treasurer.

DALTON, N. Y.—The Livingston Rural Telephone Company has elected the following officers and directors: President, A. D. Baker; vice-president, W. H. Paine; secretary, W. D. Burt; treasurer, W. W. Hunt; directors, A. D. Baker, W. H. Paine and E. Nusbickel.

COLUMBUS, O.—The officers of the Columbus Citizens' Telephone Company are Henry A. Lanman, president; John Joyce, vice president; E. R. Sharp, secretary and treasurer.

CROOKSVILLE, O.—The Crooksville Independent Telephone Company has named J. B. Rhodes as president and general manager; T. F. Wilson, vice-president; William Harris, secretary; J. L. Bennett, treasurer.

HAVANA, O.—The Independent Telephone Company, recently organized at Havana, has elected the following officers: W. E. Clymer, president; E. Moos, vice president; G. G. Van Horn, treasurer; R. C. Niver, secretary and manager.

NEW CONCORD, O.—The following officers have been elected by the New Concord Telephone Company: President, S. C. Herdman; vice-president, J. E. McClelland; secretary and treasurer, J. B. Rhodes.

TOLEDO, O.—At the annual meeting of the Toledo Home Telephone Company the following directors were elected: James S. Brailey, Jr., M. V. Barbour, W. F. Robison, Clarence Brown, J. K. Secor, J. J. Manning, Eugene Zimmerman, H. C. Stifel, A. H. Bauer, T. H. Tracey, R. E. Hamblin, T. H. Walbridge, D. C. Shaw and E. J. Marshall.

WELLSBORO, PA.—The following officers and directors have been elected by the Farmers Mutual Telephone Company: President, Francis Kelley, of Charleston; secretary and treasurer, F. H. Niles, Charleston; directors, J. F. Haverley, T. J. Davies, W. H. Wilson, James Sampton and Albert Erway.

PERSONAL.

A. S. HILLHOUSE, formerly manager of the United States Telephone Company, of Cleveland, O., has been appointed assistant general manager of the Cuyahoga Telephone Company, of Cleveland. He will in this connection assume the duties of contract agent.

D. D. SHIPLEY, contract agent of the Cuyahoga Telephone Company, of Cleveland, has tendered his resignation to accept the position of state agent of the United Surety Company, of New York, with headquarters in Cleveland.

GEORGE B. ROBERTS, who has been engineer of the Independent Telephone Company at Topeka, Kansas, and had charge of the rebuilding of its plant, is engineer in charge of the building of the new plant for the Citizens' Telephone Company, St. Joseph, Mo.

MISCELLANEOUS.

WHEATLAND, CAL.—The Independent telephone line running from Wheatland to Marysville, formerly owned by F. W. Anderson, has become the property of the Bear River Dredging Company, whose intention it is to extend the system.

New Construction in the Field

REDLANDS, CAL.—It is the intention of the Southwestern Home Telephone Company to spend about $19,000 in extending its lines into new territory, toward the Imperial Valley. A new switchboard is also being installed at Redlands.

ATHENSVILLE, ILL.—A line from Athensville to Roodhouse is to be constructed by the Illinois Telephone Company.

CANTON, ILL.—A new line from Canton to Fairview is among the improvements planned by the Canton & Northwestern Telephone Company.

M'PHERSON, KAN.—New lines are being erected by the New Gottland Telephone Company.

SHARON, KY.—New lines are to be erected by the Barber County Telephone Company from Sharon to the county seat.

AUDUBON, MINN.—It is the intention of the Audubon Telephone Company to extend its lines to Maple Grove.

LIVINGSTON, MONT.—The Shields River Telephone Company is planning to construct branch lines from Clyde Park to Cottonwood and Horse Creek, and establish a toll line from Myersburg to Livingston. About forty new miles of line will be added to the company's system.

ELY, NEV.—Active construction work has been commenced both at Ely, Nev., and Salt Lake City by the Utah, Nevada & Idaho Telephone Company.

BLUE CREEK, O.—The Blue Creek Independent Telephone Company is constructing a new line to Rome.

AVA, N. Y.—Among the improvements planned for the East Ava Telephone Company is the stringing of about thirty-eight miles of additional wire.

NAVASTOTA, TEXAS.—Three new lines are to be strung by the Navastota Telephone Company between Roans Prairie and Bedias.

OZONA, TEX.—It is the intention of Garrett Bean and E. Miller to construct a modern telephone line between Ozona and Sheffield.

BERRYVILLE, VA.—Among the improvements under consideration by the Frederick & Clarke Telephone Company is the installation of a new exchange at Berryville.

MONROE, WASH.—The Independent Telephone Company is planning to extend its lines from Monroe via Cherry Valley to Novelty.

GRAFTON, W. VA.—The Consolidated Telephone Company expects to expend about eight thousand dollars in enlarging its equipment.

MAYSVILLE, W. VA.—The lines of the Mutual Telephone Company are to be extended from Maysville to Petersburg.

THORP, WIS.—The erection of a new line from Thorp to Roosevelt is contemplated by the Thorp Telephone Company.

UNDERGROUND.

DES MOINES, IOWA.—The Mutual Telephone Company is to place all its wires in conduits in the business portions of the city.

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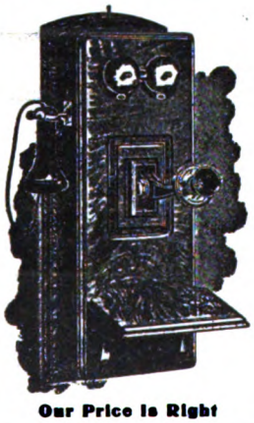

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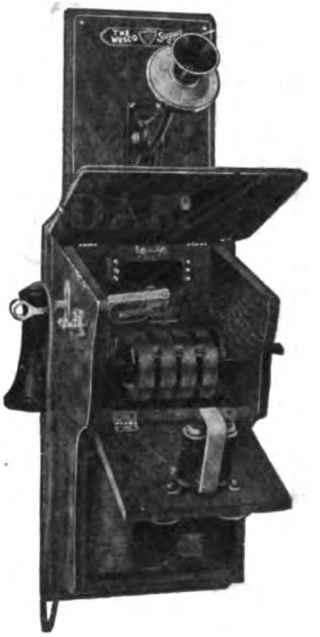

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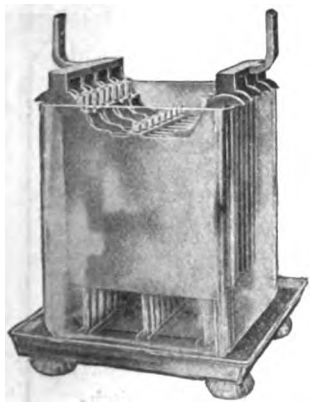

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Viewed from the standpoint of scientific theory, no other storage battery plate can compare, detail for detail, with the Gould Integral Plate. Many of the largest Telephone Companies in the United States have purchased Gould Storage Batteries on the *very apparent* merit of our battery. It is a most significant fact that in almost every such case *repeat orders* have followed the first test order. The Gould Battery has succeeded because it has made good our claims for its unusual merit and economy.

Write for our catalogues.

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Chicago---Rookery Bldg.
San Francisco---Monadnock Building
Toronto, Ont.---62 Wellington St., West

Gould Storage Battery Co.

MAIN OFFICES
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New York City
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JUST A SUGGESTION

Take one of your busy 4-party lines and equip it with "POOLE" Lock-Outs. Leave it in service a month and then see how many of the four will stand a raise of $3.00 a year rather than go back to the old way. We know the answer, but we want your subscribers to impress on you the fact that the "POOLE" Lock-Out is a rate-raiser.

It won't cost you anything to try it, because we will loan you the Lock-Outs free and there is no other equipment required. Write today for our Booklet AL-2.

Mountain State Electrical Company

WHEELING, W. VA.

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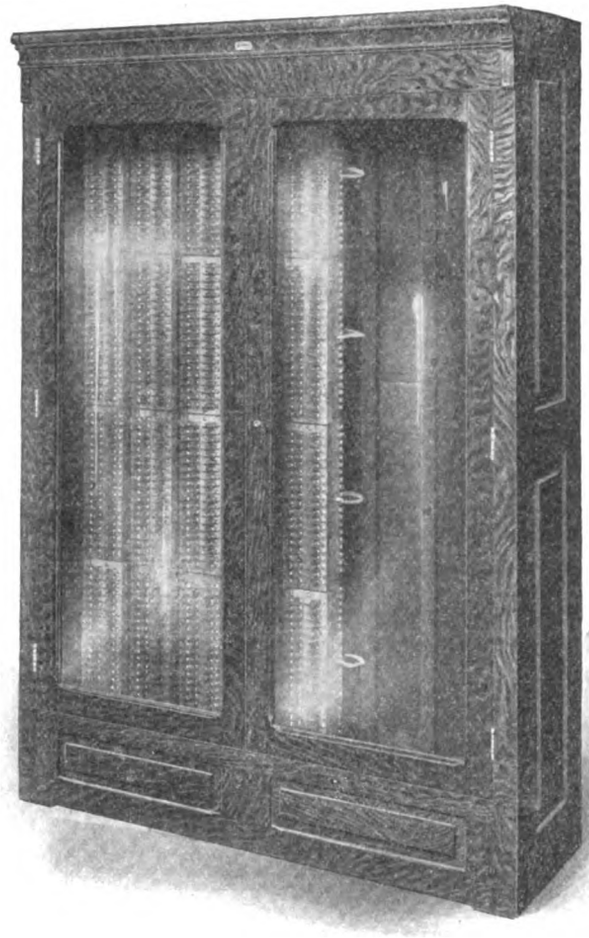
DEAN TELEPHONE APPARATUS

MAGNETO SWITCHBOARD PROTECTION



The accompanying illustration shows our magneto switchboard protection housed in a quarter-sawed oak cabinet.

This method of mounting is desirable when the terminals are to be located in the same room with the switchboard.

The cabinet has hinged glass panel doors in front and removable panels at the rear, so that both sets of arresters can be readily gotten at. Furthermore, the cabinet is made the same height and general design as our express type switchboard cabinet so that when hooked against the latter the whole has the appearance of a continuous cabinet.

We have told you about the arresters that come in this cabinet. It is a representative Dean product.

For price and further description for magneto express type switchboards and apparatus ask for our folder No. 6-A.

Factory and General Office
Elyria, Ohio

Branch Office
Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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Stromberg-Carlson Telephone Mfg. Company

Rochester, N. Y. March 16, 1907.

TO THE EXCHANGE MANAGER AND TELEPHONE USER:

Have you had experience with Switchboard Cords so poorly made they short circuited a few days after put in use?

Are you annoyed by the appearance of CORD TROUBLE on your daily operator's report — regularly?

If so, there's a remedy. Buy -

STROMBERG-CARLSON TINSEL SWITCHBOARD CORDS.

Our construction, from every standpoint, has given the best satisfaction.

- SPECIFICATIONS -

First:- Twenty-four (24) ends braided copper tinsel thread.

Second:- Serving of fourteen (14) ends Tussah Silk. Yardage per ounce shall be not less than 2000 nor more than 2500.

Third:- Braiding #40 - 2 ply cotton 16 spindles 2 threads. Average breaking strength each thread not less than 12 ounces. Yardage per pound shall be 16,800 and the twist not less than seven to the inch.

Fourth:- A bare copper tinsel conductor with one insulated as above are enclosed together by a #24 Spring Brass Wire helix, 18 to 20 turns per inch.

Fifth:- External braiding #24 - 3 ply Glazed cotton, 32 spindles 2 threads.

We furnish cords of this form to fit all makes or sizes of plug.

Put a few STROMBERG-CARLSON cords in your switchboards and note the difference.

Yours very truly,

Stromberg-Carlson Tel. Mfg. Co.

CL No.4.
HCS/OB.

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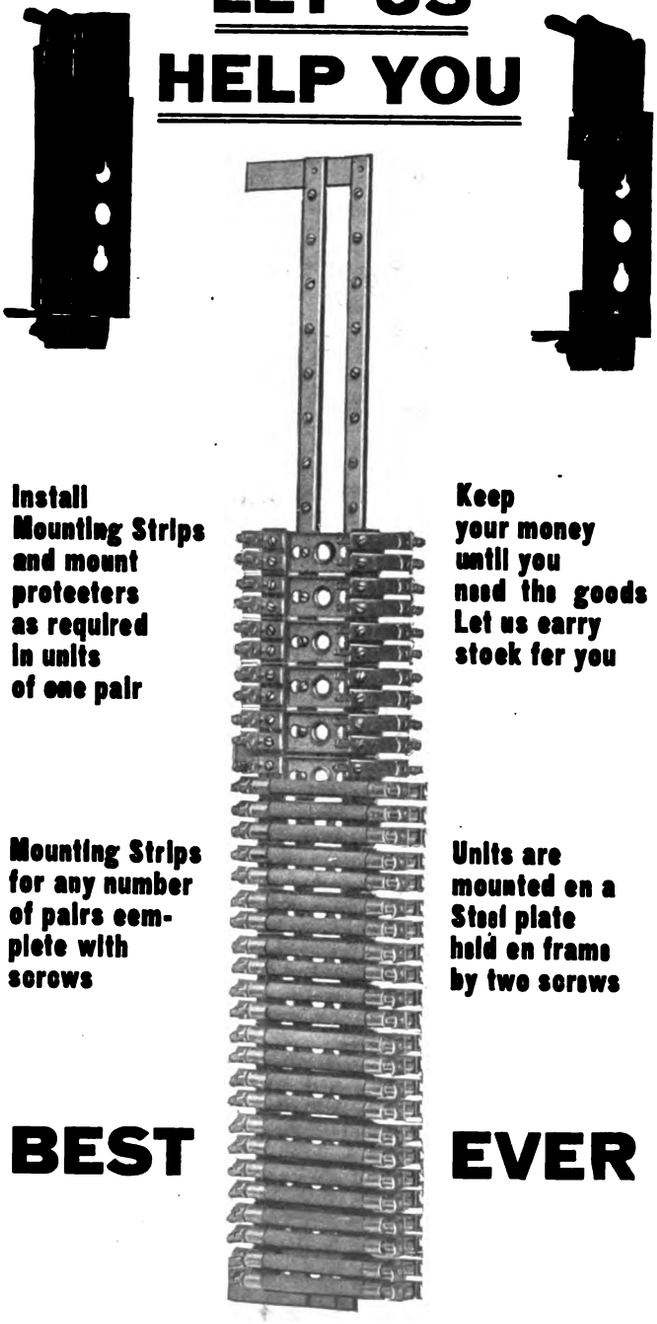
INSTALLMENT PLAN

UNIT TYPE FUSE AND CARBON PROTECTION

LET US HELP YOU



Install Mounting Strips and mount protectors as required in units of one pair

Keep your money until you need the goods Let us carry stock for you

Mounting Strips for any number of pairs complete with screws

Units are mounted on a Steel plate held on frame by two screws

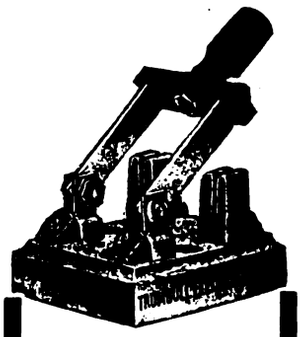
BEST **EVER**

Sterling Electric Co.

Makers of Good Goods

LaFayette -- -- -- Ind.

TRUMBULL TELEPHONE SWITCHES



RECESSES IN THE BASES HOLD CLIPS FIRMLY AND KEEP THE ALIGNMENT

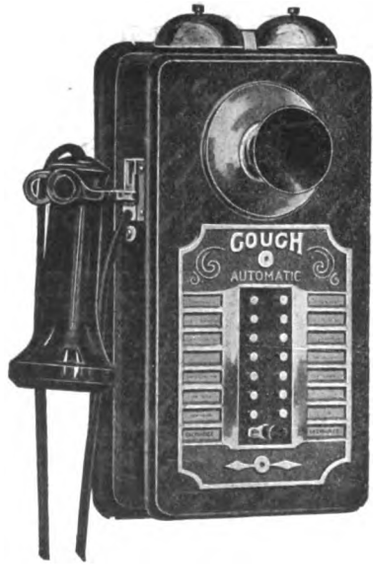
CLIPS ON ACCOUNT OF THEIR PECULIAR DESIGN, THEY SPRING TOWARD THE BLADE AND MAKE A PERFECT SELF-ADJUSTING CONTACT

WRITE FOR SAMPLE

The Trumbull Electric Mfg. Co.

NEW YORK 136 Liberty St. Plainville, Conn. BOSTON 65-67 Oliver St.

Rent your subscribers a system of



Couch Automatic Intercommunicating Telephones

with trunk button for exchange connection.

It's an "operator-less" private branch exchange, giving automatic intercommunication between departments.

Any station can secure immediate city exchange connection by the pressure of the trunk button.

Ask us about it

STANDARD SIZES:

8	intercommunicating buttons,	1	exchange button		
14	"	"	1	"	"
18	"	"	1	"	"
24	"	"	1	"	"
28	"	"	1	"	"

100% CHEAPER THAN BRANCH EXCHANGE

100% QUICKER; 100% MORE SATISFACTORY.

S. H. COUCH CO., Inc., Manufacturers

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CENTURY
100% GOOD

READY FOR BUSINESS

About May 1st, 1907

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¶Having purchased the stock and equipment of the Williams-Abbott Electric Company, Cleveland, we will continue to manufacture their line, as well as increasing and broadening the already complete line of high grade apparatus upon which we have built a prosperous business and a large satisfied clientele.

Let us tell you about CENTURY

PLATINUM ELECTRODE TRANSMITTERS
COMMON BATTERY SWITCHBOARDS
COMMON BATTERY TELEPHONES
MAGNETO CALL SWITCHBOARDS
MAGNETO CALL TELEPHONES
DIRECT CURRENT SELECTIVE SYSTEMS
RURAL SYSTEMS
PRIVATE BRANCH EXCHANGE SYSTEMS
INTER-COMMUNICATING SYSTEMS

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We contract to build entire Telephone Systems

Take advantage of our INQUIRY DEPARTMENT—IT'S FREE

CENTURY TELEPHONE CONSTRUCTION CO.
BUFFALO, N.Y., U.S.A.

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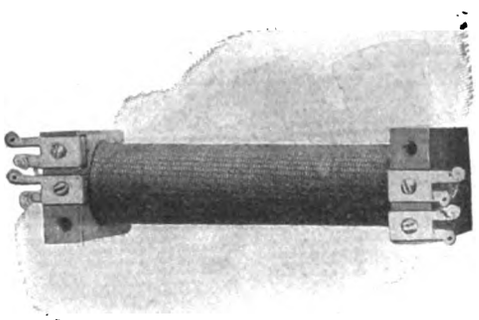
KELLOGG

TELEPHONE APPARATUS

KELLOGG COMPACT DRY CELL TYPE TELEPHONES

CONTAIN THE KELLOGG INDUCTION COIL



The No. 1-A Induction Coil is 4¼ in. over-all and the size of the spool head is 1 in. square. It is absolutely the most efficient ever produced. Responsive to the great changes set up in the primary, and as a secondary, capable of receiving with a very low retardation effect. It is placed in the most accessible position, although there is really no need of removing the coil. Tests have proven that the Kellogg Induction Coil is the greatest aid to the efficiency of any talking circuit.

Let our Department A furnish you with our Bulletins and prices on Magneto Apparatus. We solicit your correspondence.

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CHICAGO, ILLINOIS, U.S.A.

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ELECTRICAL SUPPLIES PITTSBURG ALL MATERIAL GUARANTEED
D-H-E
TRADE MARK

TELEPHONE SUPPLIES

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[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

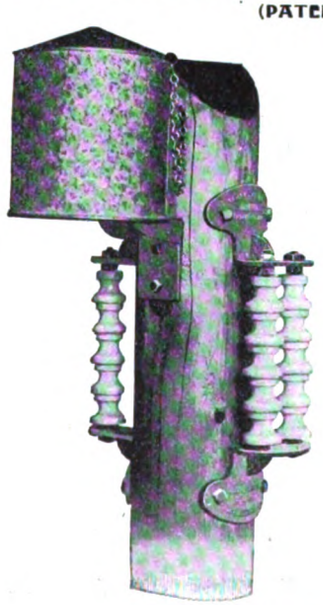
It makes you money.

Write at once for particulars and catalogue.

THE
United States Coin Register Co.
TOLEDO, OHIO

ROBINSON DISTRIBUTION RACK

(PATENTED)



This cut shows the ROBINSON RACK as used in connection with Can Top. Its extreme flexibility makes the Robinson Rack a most desirable method for distribution. No waste of insulation. Costs 50 per cent less than circle top. Easy to trace circuits. Can distribute five pairs from one side of pole; ten pairs from opposite side. Notice special drip feature.

Let us send you circulars and prices.

MANUFACTURED BY
The W. G. Nagel Electric Co.
26-30 ST. CLAIR ST., TOLEDO, OHIO

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LOOKING FOR TROUBLE?

Suppose you have a line in trouble—grounded or open. You don't know the exact location, but you send out a troubleman to hunt it up and clear it. It may take him an hour or a day. Meanwhile the subscriber is getting hot under the collar and saying things about telephones in general and yours in particular.

If you have a Pignolet voltmeter or volt-ammeter you can determine the approximate location and also get an idea of the nature of the trouble. With the information your troubleman can find the fault in jig time, and you will have prevented the subscriber kicking by giving him service at the earliest possible moment.

Does it pay to be informed? You ought to know.

LOUIS M. PIGNOLET, Originator of the Voltmeter Habit

73 CORTLANDT ST., N. Y.

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there's nothing more safe, more sure, more profitable—in the telephone business—than the securities of an Independent telephone company operating our AUTOMATIC TELEPHONE SYSTEM—

BECAUSE it gives more service, better service, prompter service, more accurate service than a manual system (and also an absolutely secret service, which no manual system can give) and

BECAUSE it costs less to operate, less to maintain, less to enlarge than a manual system, or

TO SUM IT ALL UP, the AUTOMATIC TELEPHONE SYSTEM produces a better telephone service, commanding a higher price, at less cost than inferior service can be produced for by a manual system.

THAT IS THE REASON WHY the AUTOMATIC TELEPHONE SYSTEM makes the securities of the company using it safe, stable and profitable, and why it has been adopted by the Independent telephone companies in the following cities:

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Allentown, Pa.
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Auburn, N. Y.
Battle Creek, Mich.
Beaver Falls, Pa.
Bellingham, Wash.
Butte, Mont.
Cadillac, Mich.
Champaign, Ill.
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Cleburne, Texas.
Columbus, Ga.
Columbus, Ohio.
Dayton, Ohio.
Denver, Colo.
El Paso, Texas.
Emaus, Pa.
Fall River, Mass.
Grand Rapids, Mich.
Hastings, Neb.
Havana, Cuba.
Hazleton, Pa.
Holland, Mich.
Hopkinsville, Ky.
Jonesboro, Ark.
Lake Benton, Minn.
Lewiston, Me.
Lincoln, Neb.
Los Angeles, Cal.
Manchester, Iowa.
Marianao, Cuba.
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Medford, Wis.
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Mt. Olive, Ill.
New Bedford, Mass.
Oakland, Cal.
Ocean Park, Cal.
Omaha, Neb.
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Westerly, R. I.
Wilmington, Del.
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AUTOMATIC ELECTRIC CO.

Van Buren and Morgan Sts., Chicago, U. S. A.

The metals of which ROEBLING DOUBLE GALVANIZED TELEPHONE WIRE is made are of the best quality to be obtained. The wire is drawn and galvanized by methods which have made ROEBLING wire in demand wherever wire is used. It is the cheapest wire to use, not because it is the lowest in price, but because it will last years after low-grade wire has been discarded.

JOHN A. ROEBLING'S SONS CO., Trenton, N. J.

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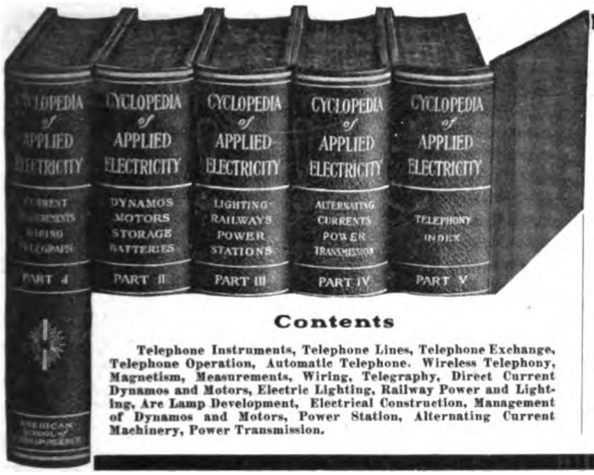

Contents

Telephone Instruments, Telephone Lines, Telephone Exchange, Telephone Operation, Automatic Telephone. Wireless Telephony, Magnetism, Measurements, Wiring, Telegraphy, Direct Current Dynamos and Motors, Electric Lighting, Railway Power and Lighting, Arc Lamp Development, Electrical Construction, Management of Dynamos and Motors, Power Station, Alternating Current Machinery, Power Transmission.

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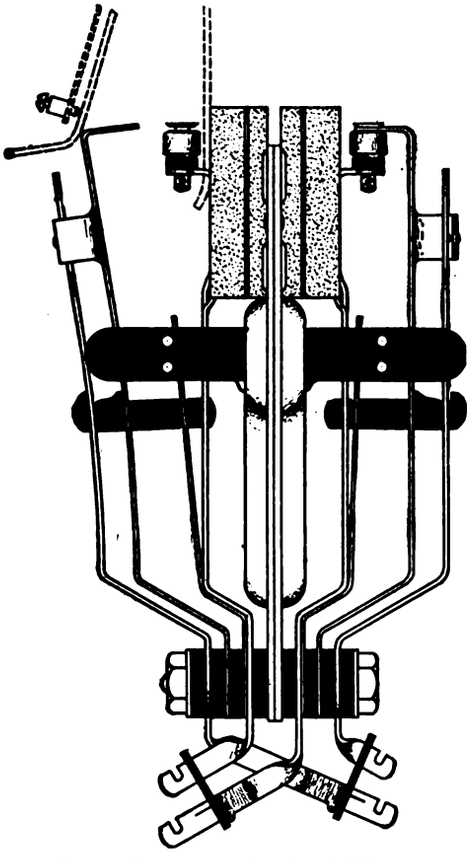
AMERICAN SCHOOL OF CORRESPONDENCE
Chicago

Amer. Tel. Jour., Mar. 16, '07



No. 10 Protector—Sectional View.

Cook's No. 10 Protector

THE automatic heat coil test, which is absolutely necessary in Cook's No. 10 Protector, before a spring which has been operated can be reset, is only ONE desirable feature of this protector.

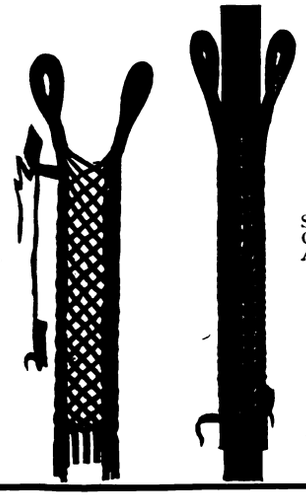
The heat cartridge isn't a WIRE coil—it can't burn out or short circuit. It has a METAL SHELL which will not burn up and start fire in the coils above it.

It has so MANY other splendid points that we'd like to have you write for some more information before ordering or specifying switchboard protectors.

Frank B. Cook.

MANUFACTURER,

238 West Lake Street, - - CHICAGO, ILL.



Split Grip Open.

Split Grip Applied

"GEM" CABLE GRIP

Never Slips · Time and Material Saved

A TRIAL WILL PROVE

Saves its cost in the first pull and guarantees a hold on the cable. Sales for the year 1906 exceeded those of previous year by thousands, which speaks volumes for its efficiency. Let's tell you more about the "Gem" and other goods.

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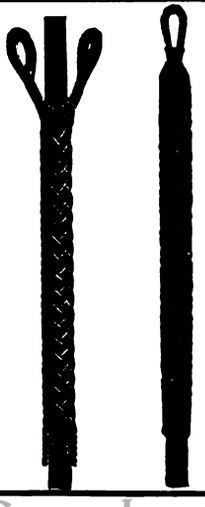
COLMAN J. MULLIN

Telephone Specialties

430 Kent Avenue Brooklyn, N. Y.



Double Eye

Single Eye

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COMMERCIAL

Do You Get It ! !

Your own fault if you don't.

Drop us a card and we will mail you our "to the minute" net price list of Pole Line LUMBER-HARDWARE and WIRES. It is issued for your use. Get all that is coming to you.

Commercial Electrical Supply Co.

15th STREET, ST. LOUIS, MO.

COMMERCIAL

REASONS WHY

YOU SHOULD INSTALL

THE CALCULAGRAPH

No. 9

(See "Reason Why" No. 10 next week)

IT INCREASES TOLL REVENUE

to a remarkable extent, because there are fewer delays, more use of the lines and every fraction of a minute the lines are in use is paid for.

It Makes No Clerical Errors — Write for Literature

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Weatherproof and Rubber Insulated Wire and Cables — Aerial—Underground—Submarine Lead Covered Cables

TERMINALS—STEEL STRAND—HANGERS

Standard Underground Cable Company

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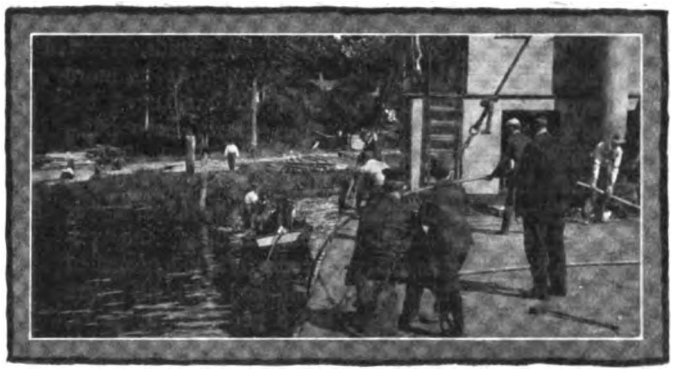
VOLUME XV. *SATURDAY, MARCH 16, 1907.* *NUMBER 11*

Laying the Hadlyme Submarine*

BY JOHN PUTNAM.

ILLUSTRATIONS FROM PHOTOGRAPHS BY THE AUTHOR.

WHEN this cable was laid a very simple arrangement of planks was used to control the motion of the reel. This provided an effective brake, to be sure, but one which was occasionally a bit inconvenient to handle. That it could be made to create a plentiful friction, as it bore against the rim of the heavily laden reel, was evident from the appearance of wisps of smoke which occasionally curled up from points where the two were in contact. This part of the work is shown in the left hand photograph at the foot of this page. It will be seen also from an examination of the next picture that some men were stationed at the point where the cable left the lighter to go into the water. Here the cable passed under a lever fastened at one end, upon which several men exerted pressure. In this way the cable was kept from unwinding more rapidly than the speed of the boat in crossing the river, so that there was no bight to be carried down stream to cause trouble before the opposite shore could be reached.

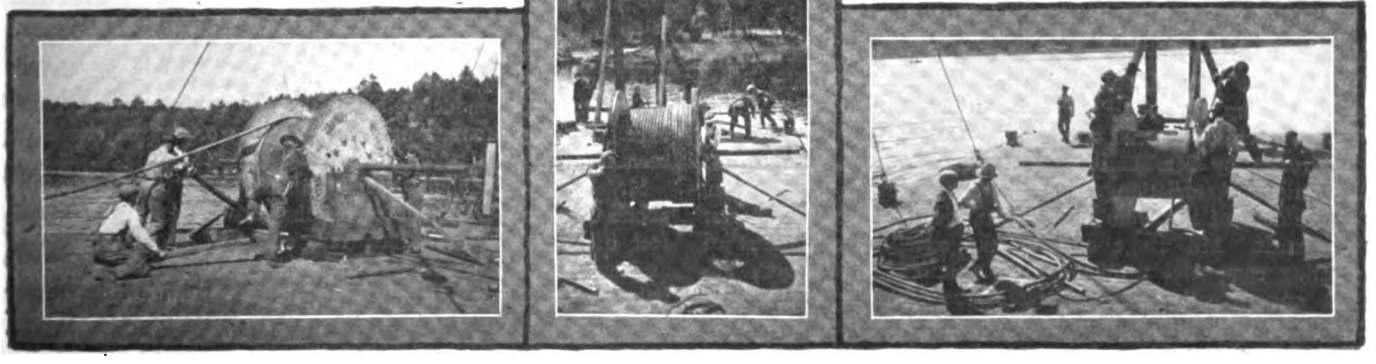


Carrying End of Cable to Shore in a Small Boat.

That this cable was no small affair may be seen from a comparison of the size of the big reel with the height of the men beside it. The cable, which was 18,000 feet long, weighed 10,000 lbs. It contains 25 pairs of No. 19 gauge B. & S. copper conductors, each insulated with two wrappings of paper wound in opposite directions. These conductors are twisted in pairs, with a lay not exceeding 3 inches, and are then laid up in a cylindrical core in reversed layers. This core is covered with two wrappings of paper. Outside of this core comes the lead sheath, which is 5-32 inch thick, which accounts for a very considerable portion of the weight of the cable which caused so much friction. The lead in the sheath is alloyed with tin to an amount not less than 3 per cent. Three separate layers of jute, wound in reverse directions, cover the lead sheath. Outside of this comes the armor of iron wire, No. 4 B. W. G., .238 inch in diameter. This armor is wound with a lay of between 20 and 24 inches; over it comes still another soft covering, this time of two wrappings of hemp, the two being laid on in reverse directions. This hemp is saturated with a preservative compound, composed of 65 parts of mineral pitch, 20 parts fine sand and 5 parts of tar, and to complete the job the cable is covered with whitewash or a similar material to prevent the coils from sticking together or to the reels. The armor wire is, of course, galvanized according to standard specifications.

As the lighter was warped toward midstream the cable was gradually unwound at the same speed as was made by the boat, so that it lay in approximately a straight line along the bottom, no wasteful slack being allowed to pass out. When the tug was reached the lighter was lashed to it, and the two then went forward to the east shore. When this shore was reached there was still some cable left on the reel, and this cable, of course, had to be taken off before it could be extended to the terminal on the bank. It was unwound by hand, with the reel still mounted on the shaft set up on the blocks. The cable may be seen in the right hand photograph at the foot of this page just as the last coil had been taken off, all of the loose length having been carefully laid out on the deck in the form of a figure eight, one loop of which is visible in the picture. The end of the cable was then taken ashore, and by means of a block and tackle all that was coiled on the deck of the boat was drawn over into the water and then to shore, where it was laid in a trench which had been dug from the edge of the water to the point of termination.

*Continued from the issue of March 9th.



The Cable Unreeling; Planks Held Against Periphery of Reel are Used as Brakes. *The Start of the Trip Across; Cable Unreeling Steadily.* *Prying Off the Cable End on Arrival at the East Shore.*

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The Annual Convention of Michigan Telephone Men

By J. B. Ware.

THE tenth annual convention of the Michigan Independent Telephone Association was held at Coldwater, Mich., March 7-8, and was the most successful of the entire series of annual gatherings. Mayor G. E. Kleindinst made an excellent address of welcome, and Mr. E. B. Fisher, as president of the association, followed with an appropriate response and a fine annual address, reviewing conditions telephonically in Michigan and other states. The report of Treasurer Robinson, of Muskegon, showed a cash balance of $140 in the treasury. Every topic upon the programme was presented, except one—an unusual occurrence.

The list of addresses, according to the programme, was as follows: Thursday, March 7, 1907, 2:00 P. M. Address of Welcome, Hon. G. E. Kleindinst, Mayor of Coldwater; Response and address, Hon. E. B. Fisher, president Michigan Independent Telephone Association; Report of Treasurer, William Robinson, Muskegon; Report of Secretary, Hon. J. B. Ware, Grand Rapids; "Improving Toll Line Service," H. T. Clough, manager Owosso Exchange; State Traffic Association, W. S. Vivian, manager, Grand Rapids; "Telephone Patrons," Fred C. Hughes, manager Lansing Exchange; "Getting Business," C. H. Hood, contract department, Home Telephone Co., Detroit; "Manitoba Experiences," N. F. Wing, president Farmers' Telephone Company, Jackson; State Managers' Association, F. V. Newman, manager exchange at Grand Rapids; "Michigan's Thumb," H. A. Price, general manager Saginaw Valley Telephone Company, Bay City. Friday, March 8, 1907, 9:30 A. M.: "International Telephone Association," J. B. Hoge, president, Cleveland, O.; "Neighborly Greetings," Hon. F. L. Beam, president Ohio State Association (also from other visitors from Ohio and Indiana); "Our Duty to International Association," C. E. Tarte, general manager Citizens' Telephone Company, Grand Rapids; "Encroachments," J. E. Hisey, president Laingsburg Telephone Company; "Our Rural Friends," A. B. Fishback, manager Livingston Home Telephone Company, Howell; "Important Lessons in Rural Service," Thos. Bromley, Jr., general manager Lake Shore Telephone Company, Hart; "Chicago Connections," Theo. Thorward, president South Bend, Ind., Home Telephone Company; "Conditions in the Northwest," Hon. J. B. Ware, Grand Rapids.

E. B. Fisher, President of the Michigan Association.

While all the subjects discussed were treated in an admirable manner, the papers presented by Mr. H. T. Clough, Owosso, on "Toll Service"; by Mr. C. H. Wood, Detroit, on "Getting Business," and by Mr. A. B. Fishback, Howell, on "Our Rural Friends," were of especial merit and value.

Addresses by Mr. J. B. Hoge, Cleveland, O., president of International Association, and Mr. Frank L. Beam, Mt. Vernon, O., president of the Ohio Association, were of greatest interest and benefit. Mr. Hoge outlined the excellent conditions of operating companies throughout the country. Mr. Beam's address was an enthusiastic review of the Ohio conditions. He stated that Cleveland in 1896 had 6,500 telephones and now over 45,000; the latter figure being equal to the total number of telephones in Ohio in 1896. Last year the growth of the Ohio Independents was 22,000 telephones, and everything indicates that this year's increase will excel that of last year, in which case on the first of next January there will be more Independent telephones in Ohio than the Bell had in the entire United States in 1896.

Mr. Theodore Thorward, president of the Home Telephone Company, of South Bend, Ind., was present with an interesting paper explaining the present activity in building the long distance lines in Chicago, and the rapid development of the exchange in his city this year. The obtaining of the long distance connections with Chicago is of utmost importance to Southern Michigan, and the assurances given by Mr. Thorward make certain the development of Southwestern Michigan this year, including Kalamazoo, Dowagiac, Benton Harbor and St. Joseph. General Manager C. E. Tarte, of the Citizens' Telephone Company, Grand Rapids, announced that arrangements had been completed between the Citizens' Company and the one managed by Mr. Thorward for Chicago connections, and the toll lines between Grand Rapids and South Bend will be built this spring.

Thursday evening was given over to written and verbal reports from a large number of the companies in the state. Without exception all were favorable, showing that conditions of healthy growth and prosperity prevail. The Citizens' Company, of Grand Rapids, reported over 27,000 telephones in its system, owned by it in its more than 80 exchanges, besides nearly 4,000 miles of modern toll circuits. It has paid 38 quarterly cash dividends of 2 per cent, making the exceedingly good record of nine and one-half years of 8 per cent dividends. Its largest exchange is Grand Rapids, with over 8,500 telephones — the Bell having about 3,500. The population of the city is 100,000.

J. B. Ware, former secretary of the Michigan Independent Telephone Association.

The Saginaw Valley Telephone Company was reported by Auditor F. M. Howard, with about 4,000 telephones in the Saginaw Valley and 1,500 in the "Thumb." General Manager Price, in his excellent article upon "Michigan's Thumb," having in detail explained the development therein, showed that while the Bell had not a single exchange, the Valley Company, with the three small companies, has about 2,000 telephones in the 15 exchanges, and all are connected by good toll lines. Mr. Howard furnished information as to the amended franchise at Saginaw recently secured through the splendid efforts of Mr. C. O. Trask, which has a satisfactory "sliding scale" of rates, and was passed by unanimous vote of the council after months of campaigning upon the problem, and with the hearty approval of the citizens generally.

This assures a modernizing of the Saginaw exchange, and at once. Already $100,000 in cash for this work of extension has been secured.

Mr. W. B. Woodbury, general manager of the Home Telephone Company, Detroit, reported that his company put 1,200,000 feet of underground in last fall, and will begin work again as soon as the frost comes out of the ground. Poles for distribution have been placed, and a large quantity of cable has been drawn in during the winter. It is expected that the cable system for the main exchange will be completed by the time the main exchange is finished. The building is already up to the second story and will be finished in May. It is expected

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to begin service about September 1, and to give commercial service in October, or at the latest in November next. The verified contracts already signed number 10,174, as reported by Mr. C. H. Wood in his article, to which reference has been made. Mr. Woodbury outlined the plan of developing other exchanges and the long distance business in Southeastern Michigan. The recent organization of the Inter-State Telephone and Telegraph Company, with $15,000,000 capital, was for the purpose of carrying out the plans named, and ample capital has already been secured.

Hon. W. O. Hunt, Adrian, reported 1,500 telephones, and 17 per cent dividends last year, also that the free service of the Bell company, so many years in force in Adrian, was discontinued last January, and with material results.

General Manager King, of Ann Arbor, reported the Home Company with 1,796 telephones in Ann Arbor, Ypsilanti and Dexter, which have all made a splendid gain during the past year. He described the very satisfactory installation and working of four police telephones in public places with 12-inch gongs, and stated that the council had unanimously voted to increase the number. He also reported having 70 University of Michigan professors as subscribers to the Home Telephone, the great majority having been secured during the past few months by reason of the popularity of the Home Company's excellent service. The outlook is most satisfactory.

The report of General Manager Melchers, of the Union Telephone Company, Alma, showed 7,000 telephones. The company has paid 8 per cent dividends for eight years. Satisfactory growth has been experienced, and excellent prospects for a continuance of these healthy conditions seem assured.

President A. C. Himebaugh (Burr Oak), of the Southern Michigan Telephone Company, reported having completed a large amount of long distance and exchange work in Southern Michigan during the past year, and has even larger arrangements planned for the present year. The recently finished exchange in Coldwater is as neat and trim as any plant in the United States. It is all cable construction—the first in the state. Mr. Himebaugh stated that during the five weeks the plant has been operated not one case of trouble has been reported. The very high standard of construction in the Coldwater exchange, the recent making of contract relations between Mr. Himebaugh's company and the Adrian Telephone Company for long distance development, and the building of an exchange in Hudson by Mr. Himebaugh, insures for Southern Michigan modern and adequate development for independent telephone interests, and this is sure to come with great rapidity. Mr. Himebaugh hopes to build Three Rivers, and possibly Kalamazoo, during the year.

Other very interesting reports were made as to growth and conditions of companies throughout the state. While complete statistics are not yet compiled, the indications are that Michigan has 100,000 Independent telephones now in service.

Mr. J. B. Ware reported that but 2.76 per cent of the stock of the Michigan State Telephone Company (Bell) was owned in the state, and this is held by 76 different persons.

There were about 150 members in attendance. The following were elected officers for the coming year: President, E. B. Fisher, secretary Citizens' Telephone Company, Grand Rapids; secretary, W. S. Vivian, Grand Rapids, manager of the State Traffic Association; treasurer, A. C. Himebaugh, Burr Oak, president Southern Michigan Telephone Company. Mr. Vivian's selection as secretary is most fortunate, as his constant and active relation to each of the operating companies in the state, through the Clearing House or Traffic Association, will enable him to obtain accurate data with great economy of time and effort.

Among resolutions adopted was one offered by Mr. C. E. Tarte, as follows: "That the Michigan Independent Telephone Association, appreciating the good work that has been and is being done by the International Independent Telephone Association, and being in thorough accord with its plans for the future, heartily endorse them, and pledge its liberal support, both financially and morally, to its future success."

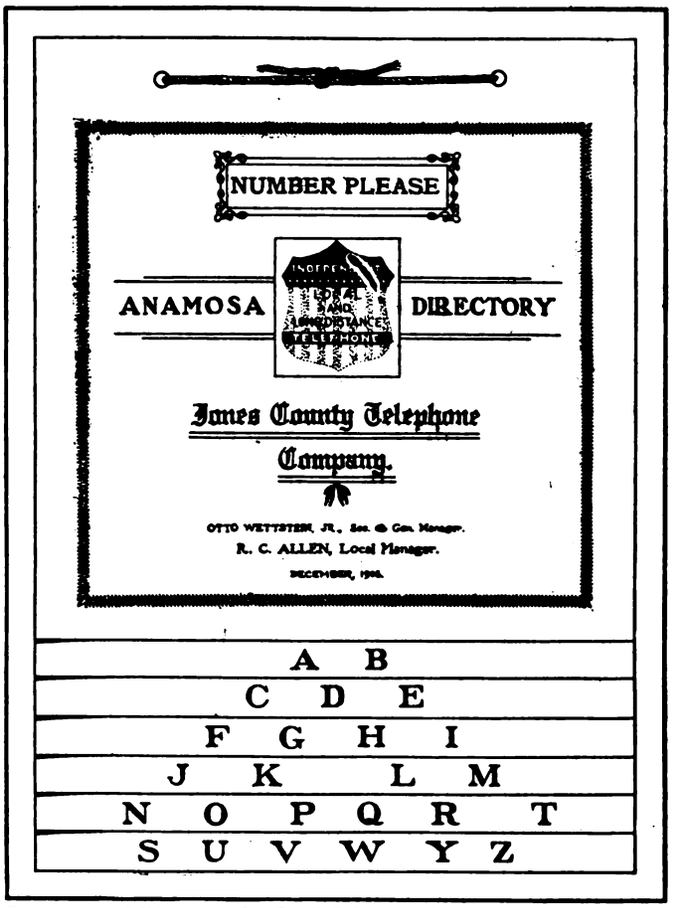
The executive committee will be announced by the president, as provided by the constitution. A legislative committee was appointed by the president as follows: W. B. Woodbury, Detroit, Home Telephone Co.; R. B. McPherson, Howell, Livingston Home Telephone Co.; R. D. Graham, Grand Rapids, Citizens' Telephone Co.; W. B. Melchers, Alma, Union Telephone Co.; Thos. Bromley, Jr., Hart, Lake Shore Telephone Co.

The following were elected to attend the International Independent Telephone Association as delegates and alternates-at-large for the state: Delegates, J. B. Ware, Grand Rapids; W. B. Woodbury, Detroit; A. C. Himebaugh, Burr Oak; W. J. Melchers, Alma; C. E. Tarte, Grand Rapids. Alternates: R. B. McPherson, Howell; R. C. Smith, Homer; C. R. King, Ann Arbor; W. A. Young, Benzonia; H. A. Price, Bay City.

A DIRECTORY IDEA FOR SMALL TELEPHONE COMPANIES.

THE accompanying illustration shows the appearance of the front of one of the directories of the Jones County Telephone Company, of Anamosa, Ia.

This company operates a large number of rural lines, and the list of its subscribers, closely printed, occupies six pages of



Front View of Directory of a Small Telephone Company, Printed on Cards, With Index at the Foot of Each Card.

the different lengths indicated by the horizontal lines at the foot of the diagram. The actual dimensions of the directory are 6¾ inches by 9⅜ inches. The first page, which serves as a cover, being square, is 6¾ x 6¾ inches in size, and the others increase in length by regular intervals.

The foot of each directory page is left blank, with the exception of the letters which serve as an index. The list of names is arranged in two columns, with a dividing line between, so that the index letters not only indicate the page, but also the column in which the names beginning with a given letter may be found. The dimensions of the directory are so chosen and the arrangement of lists so made that in no case is a group of names beginning with a single letter divided between two pages. Blank spaces in the columns are left, when necessary, in order

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that this plan may be carried out. The leaves of the directory are made of fairly heavy Bristol board and bound together with a cord. In the centre of the front cover is the Shield in the regulation three colors. This idea seems to be a very good one for moderate sized rural line companies, giving a durable directory which can be arranged in convenient form at a comparatively low cost. It presents a number of alvantages over the use of a book for a list of moderate size.

A Photographic Process for Registering the Voice

By Dr. Alfred Gradenwitz.

MOST of the apparatus so far used for registering and reproducing the human voice (phonographs and graphophones) show the disadvantage that the quality of reproduction is impaired by disturbing secondary noises, while on the other hand records are subject to a more or less rapid wear and tear in the case of frequent use. Only the selenium phonograph or photographophone invented by E. Rühmer and the electro-magnetic phonograph or telegraphone are believed to be nearly free from these defects, but the low intensity of the records given by these apparatus is usually considered a drawback in their use.

A novel method for registering photographically the sounds of the human voice has been recently suggested by J. Palla, of Prague. If a porous moist layer of material such as paper, gelatine, etc., placed on a conductive plate and soaked with a solution of metallic salt, be submitted to the action of electric currents, supplied through a metal point touching the sensitive layer, alterations will be produced in the latter, the salt solution being decomposed and the metal being precipitated on the plate located underneath. The current carrying point may be moved over the surface of the moist layer in any path whatsoever, and if the layer in question be afterwards treated with a convenient reduction agent the line traced by the point on the plate will become transparent, while all the surrounding parts appear dark. In fact, the layer is permeated throughout its mass with a finely divided reductive metal, excepting those portions at which the metal, having been precipitated by the effect of the current, cannot be further reduced

If in the place of a constant current, varying current impulses be made to act on the layer, a transparent line of an intensity proportionate to the actual current intensity will be obtained instead of a continuous transparent line of uniform depth and dimensions.

In fact, an amount of metal corresponding to the current intensity will be precipitated and protected against the effects of a subsequent reduction by each current impulse traversing the plate. If the currents be produced by a transmitter, a stronger sound will correspond to a more intense transmitter current, and, as the latter will precipitate a more considerable quantity of metal, to a more transparent portion of the layer.

On testing the electrical conductivity of the layer the dark portions, owing to the metal contained in them, will be found to possess a far greater conductive power than the transparent portions, conductivity being varied in the same manner as the intensity of the microphone current. Thence it is inferred that by

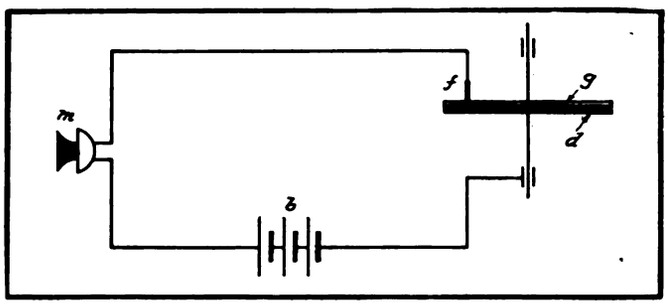

Fig. 1. Arrangement for recording the voice by a photographic process, using ordinary telephone transmitter.

inverting the experiment, that is to say, by using a layer previously acted upon and a telephone receiver in place of a transmitter, the telephone will receive current impulses quite similar to those previously generated by the transmitter. The telephone will thus give out the same sounds and notes which had exerted their action on the transmitter, and the same plate can thus be used in recording and reproducing the voice, but for the sound waves being displaced temporarily by one-half phase. The inventor, however, recommends preparing copies of the record plate according to a process quite similar to a photographic method. The record plate is used as positive and a layer of paper or gelatine, rich in silver, as negative, when any number of copies will be obtained which, at the places characterized by a greater intensity of sound and current during the registering process, will contain greater amounts of silver, thus opposing a smaller resistance to the telephone current. The recorded sounds thus become audible according to their proper value.

In Fig. 1 is represented the arrangement used in registering, and in Fig. 2 the arrangement for reproducing sounds. The former comprises in the circuit of a battery *b* a transmitter

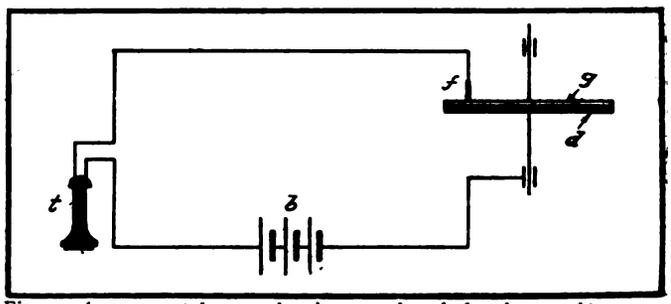

Fig. 2. Arrangement for transforming record made by photographic process into speech with the aid of a telephone receiver.

m and a rotating disc *d* covered with a porous layer *g* on which slides a metal point *f*, moving in a manner analogous to a graphophone point radially toward the axis of the disc and tracing on the latter as it turns a spiral line. The porous layer *g* is soaked with a silver salt sensitive to light.

On talking into the transmitter *m* each increase of current between the point *f* and metal disc *d* will correspond with the decomposition of a certain amount of silver salt and the precipitating of a proportional amount of silver on the plate *d*. A spiral line of varying silver percentage is thus formed on the layer *g*, the silver percentage being inversely proportional to the intensity of the current actually traversing the plate. If now the layer *g* be exposed to light, all the silver remaining in the latter will be reduced, and while at those places at which no current has been allowed to pass portions of maximum silver percentage will be produced, only the product of decomposition will remain at the point traversed by current, in proportion to the actual current intensity. The product of decomposition having been removed by fixing and washing, a photographic negative of the layer is prepared with a current-conducting layer. The spiral line formed in this negative will show a maximum percentage of silver at those places of the layer which contain minimum amounts of silver, thus offering a minimum resistance, so that in the negative the amount of current-conducting silver will be directly proportional to the actual intensity of the recording current, and thus to the intensity of the sounds. If now, the negative *h* having been placed on the plate *d*, a telephone *t* be substituted in the circuit for the transmitter previously used, the same current fluctuations as in the recording circuit will be generated in the line, the sounds perceived in the tele-

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phone thus being identical to those recorded by the transmitter.

Another alternative consists in soaking the layer *g* with sodium cyanide and using an iron contact point. According to the actual current intensity in the recording circuit, a variable amount of Prussian blue will be formed in the layer. After fixing this layer, a photographic negative is prepared with yellow light, which negative again serves for preparing photographic positives showing maximum amounts of metal at those points which contained maximum amounts of Prussian blue in the recording layer, thus showing a minimum resistance and giving out sounds of maximum intensity.

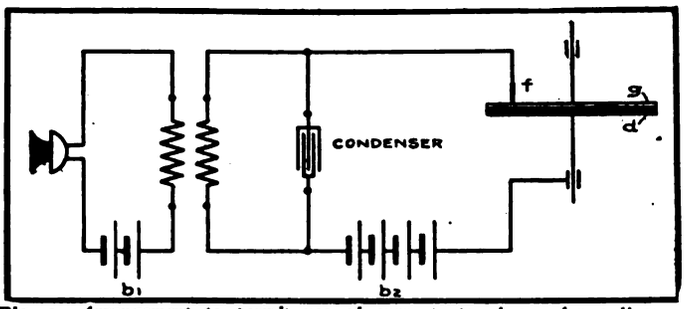

Fig. 3. Arrangement to permit use of currents too heavy for ordinary transmitter to give better voice records.

As ordinary transmitters will admit only of low current intensities, either a multiple transmitter with induction coils connected up in parallel, or an arrangement analogous to that of talking lamps should be used (Fig. 3). The latter arrangement will allow great current intensities to be used.

If the recording and reproducing stations be distant from each other (being connected by a wire) the above arrangement can obviously be used for telegraphic or telephonic purposes. The inventor also hopes to use his apparatus for wireless telegraphy and telephony.

Rural Party Line Ringing Codes

HAVING been "up against" the Multi-Party-Line Ringing Code propositions very much of the last two years and, in that time, tried everything I have been able to pick up, finally discarding all these codes or schemes and devising an original one which has so far proven successful, I can hardly resist the editorial invitation of February 16 to submit some of the schemes tried.

The first, and perhaps the simplest tried was Code A, shown in the accompanying Table 1.

This code provided for more than one exchange, or switching point, which is a comparatively rare condition on lines so heavily loaded as the code provides for, i. e., thirty telephones and four switching stations.

As may be readily noted, long rings were used for the exchanges, while for the parties short, or short and long calls were used in accordance with the following scheme: One to five represented by corresponding numbers of short rings; six to ten by one long (practically equal to five short) plus from one to five short rings; numbering above ten being made up of numbers as the preceding and using "space" (about one second) to indicate separations between figures; thus the code can be enlarged to provide for ninety-nine telephones if this were desired.

NOTE.—First set, Nos. 1, 2, 3 and 4, for exchange or switching station; other numbers for subscribers.

No.	
1	—
2	— —
3	— — —
4	— — — —
1	—
2	— —
3	— — —
4	— — — —
5	— — — — —
6	—— —
7	—— — —
8	—— — — —
9	—— — — — —
10	—— — — — — —
11	— —
12	— — —
13	— — — —
14	— — — — —
15	— — — — — —
16	— —— —
17	— —— — —
18	— —— — — —
19	— —— — — — —
20	— —— — — — — —
21	— — —
22	— — — —
23	— — — — —
24	— — — — — —
25	— — — — — — —
26	— — —— —
27	— — —— — —
28	— — —— — — —
29	— — —— — — — —
30	— — —— — — — — —
31	— — — —
32	— — — — —
33 Extra	— — — — — —
34	— — — — — — —
35	— — — — — — — —

Table 1.

The principal difficulty met with in practice was with the "spaced" numbers, such as eleven, often rendered as two, or with twenty-two, often rendered as four, etc.; also, unless care was used, when a call, twelve for instance, was repeated several times the last part (two short) would be taken with the first part of the repeated call (one short) and understood as twenty-one, etc. This led to the adoption of Code B, shown in Table 2.

Exchange No.	
1	—
2	— —
3	— — —
4	— — — —
5	— — — — —
6	— — — — — —
7	— — — — — — —
8	— — — — — — — —
9	— — — — — — — — —
10	— — — — — — — — — —
11	—— —
12	—— — —
13	—— — — —
14	—— — — — —
15	—— — — — — —
16	—— — — — — — —
17	—— — — — — — — —
18	—— — — — — — — — —
19	—— — — — — — — — — —
20	—— ——
21	—— —— —
22	—— —— — —
23	—— —— — — —
24	—— —— — — — —
25	—— —— — — — — —
26	—— —— — — — — — —
27	—— —— — — — — — — —
28	—— —— — — — — — — — —
29	—— —— — — — — — — — — —
30	—— —— ——
31	—— —— —— —
32	—— —— —— — —
33 Extra	—— —— —— — — —
34	—— —— —— — — — —
35	—— —— —— — — — — —

Table 2.

It will be noted that in both of these codes there is used for the first party one short ring, assuming that the answer will be by "voice."

In many instances the parties use that ring as an "answer," also as a "ring-off," in which case it is necessary to omit the first party call and start with the second, thus considering the exchange or switching point the first party on the line. Such a practice, common as it is, can hardly be considered logical as, particularly on heavily loaded lines, the disconnecting at the exchange is at least as important as the connecting, because, even with the remarkably strong generators of the present day, there is quite a difference between ringing the bells on one line and ringing those on two such lines together; in addition to this the best of generators will be comparatively short lived if used much on lines while practically short circuited, as are, from a

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ringing standpoint, such lines while two or more are connected together.

When disconnections are not promptly attended to there is a probability of confusion from rings going through the exchange to parties on the connected line when a party on the caller's own line is desired; on this account we have found it a good plan to use the same ring for the exchange, whether a connection

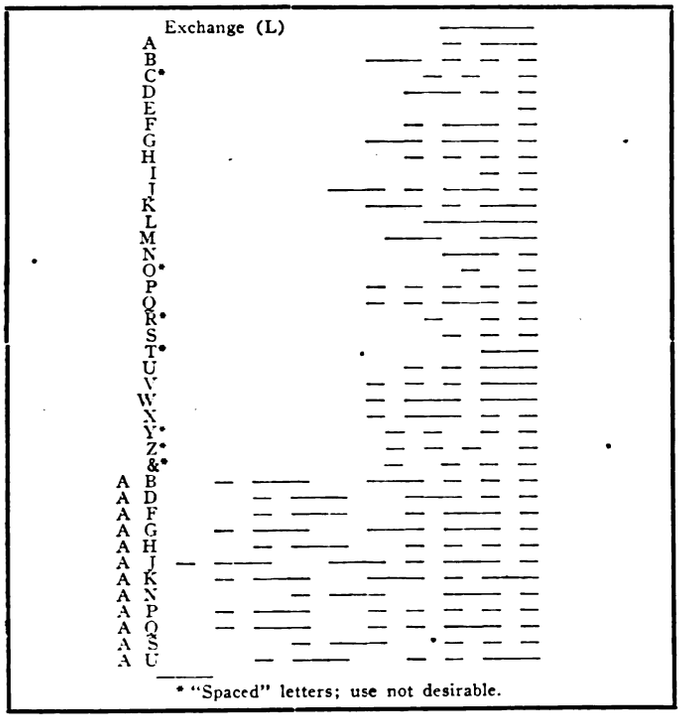

Table 3.

or a disconnection is desired; the element of doubt generally insuring better attention at the exchange or switching station, particularly where the attendant has other duties to attend to.

Code B worked first rate for some time, as it was simple like Code A and eliminated its most troublesome feature: "spaced" signals. When this code was used we had push buttons wired in series with the generators so that one could turn the crank continuously while making the signal with the button, this scheme being very useful as a time saver when any complicated or extensive code is used.

We would probably still be using this code had not the company, about the time we had gotten things going smoothly, shown its rank rurality by becoming a sub-licensee of the Boston Octopus, after which we had to take what equipment they saw fit to hand out rather than what we should have had, so we were furnished with "No. 237-a Wall Sets," these being equipped with large five bar generators (with a light weight—about three bar size gearing), the armatures of which were *cast* instead of laminated, as are practically all good high power generators at present.

These soon "fell down," due partially to the heavy loads on our lines and partially to the hard usage incidental to repeated futile efforts, on the part of our subscribers, to get the parties on the ends of the various long lines. The average individual, particularly if in a hurry, starts the crank with a jerk, then instead of allowing it to come to rest at the end of a revolution, stops it with a similar jerk when ringing a series of short rings. In ringing nine, ten or nineteen, for instance, this means eighteen or twenty jerks on the generator mechanism. It soon became evident that the generators would not stand this sort of thing and as the licensing company would furnish push buttons in the generator circuits under no circumstances whatever, and would not allow us to "mutilate" the instruments by installing the buttons ourselves, we had to change the code to suit the equipment.

Code B is very simple in principle; short rings to the number desired, form the calls from one to ten, while for the "teens" (including eleven and twelve), one long, followed by the proper number of short rings to indicate which "teen" is desired, is used; the twenties being formed similarly except that they are introduced by two long rings. This scheme is, like the preceding, capable of expansion, so as to include calls for any practicable number of telephones.

Where either Code A or B is used, it is generally feasible to letter the lines and number the calls, as the multi-party lines in any one exchange or switching station will very rarely exceed twenty-five in number.

In the next code we used we numbered the lines and lettered the calls, using the Morse alphabet as shown in Table 3.

As spaced letters had to be omitted, for reasons previously explained, we were limited to twenty calls, including the exchange, for which L (one long ring) was always used, and as we had lines with as many as forty-nine instruments on, we "doubled up" some calls in this wise: AB, AD, AF, AG, AH, AJ, AK, AL, AN, AP, AQ, AS, AU, AV, AW, AX, BA, BB, BD, BE, etc. This looks rather odd to a telephonist but the scheme is a fairly good one for use where the generator equipment is not good and all unnecessary wear is to be avoided. It will be found that subscribers will learn the rings associated with the letters, or vice versa, with fair rapidity, much better than one would at first suppose, so that there is little trouble experienced in applying the code. It is understood, of course, that the code is to be carefully explained in the subscriber's directory or list.

The greatest difficulty met with in its use was the confusion of letters due to their close similarity in sound, particularly when transmitted telephonically, as B and V, C and E, S and F, M and N, etc. This fault is inherent in all codes employing other than a few easily distinguishable letters, as many managers of large city exchange systems have learned to their chagrin after attempting to designate all of their branch offices by letters; the confusion in some cases being almost indescribable, and compelling the abandonment of the scheme.

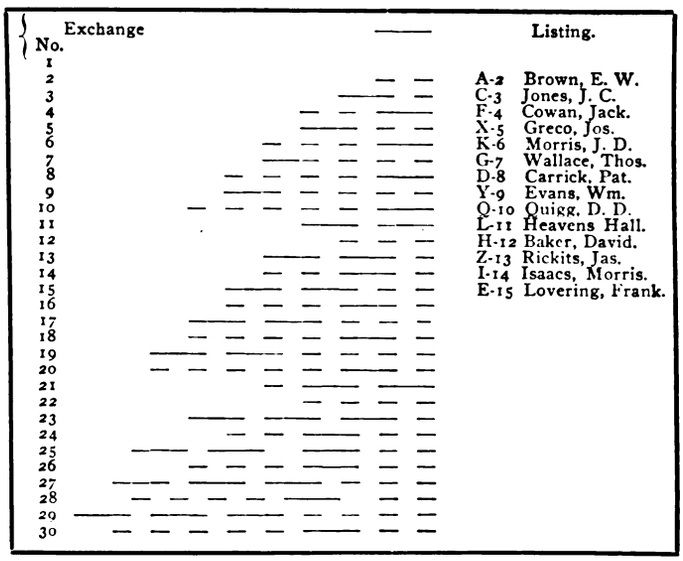

Table 4.

The next code proposed was Code D, shown in Table 4, which possesses some particular as well as peculiar advantages; note that all "odd" numbered calls are formed with an initial "dash" (or long ring) while all "even" numbered calls are initialed by two "dots," or short rings. This code is, like some of its predecessors, comparatively simple, also to a considerable extent systematized; fourteen is formed by adding one short ring to four, twenty-four is four plus two short rings, thirteen consists of three-prefixed by one long ring, twenty-three is three prefixed by two long rings, etc., thus this scheme can be enlarged upon to fulfill the requirements of a line equipped with any workable number of telephones.

(To be continued.)

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QUERIES

PICKING OUT PAIRS IN CABLE CARRYING BATTERY (831).

How does a cable splicer pick up his pairs on a cable with common battery wires working in it? Suppose he wants to go out and multiple a can on wires that are working with probably 24 volts on the line? Please explain what kind of tests they make? H.

There are a number of methods whereby cable pairs may be tested without disturbing either the subscriber or central office on a common battery system, which, we presume, is what you mean in your third question. We will describe only one, however, which is exceedingly simple and easily understood. In Fig. 831-*b* is shown the circuit arrangement of a test set that may be arranged in very compact form and readily carried by the cable splicer.

In a case where the cable splicer is testing for wires in the cable which are not in use he simply attaches his testing points, which may be a pair of wire clips to a pair of wires, and with his switch on point No. 1 listens in on the line. If he hears conversation he will be at once assured that the line is not a dead one; however, if he hears nothing he may then throw his switch to point No. 2, thereby cutting the buzzer in service and cutting the transmitter out. If the line is entirely open he will not get any noise in his receiver, but if, on the other hand, the line has an instrument on it or is connected at the central office, the secondary circuit of his induction coil will be completed through either the instrument or central office, and he will naturally get a loud buzzing noise.

The current emanating from the secondary side of the induction coil being of an alternating nature will readily pass through the condenser in the subscriber's instrument. The alternations are, however, of such high frequency that the subscriber's bell will not be sensitive enough to be actuated; the central office relay will not be affected either for the same reason. Thus, in the event of the cable tester getting on a line in service he will disturb no one.

If it is desired to make multiple taps on lines already in service, the cable tester will need an assistant either at the central office or at a cable box with a talking set, as shown in Fig. 831-*a*. The assistant will select a pair among those upon which a tap is to be made, and cut in across the pair with his testing points. The cable tester will then test on different pairs with his switch on point No. 1, and talk into his transmitter. As soon as the proper pair is located he will be able to talk to the assistant.

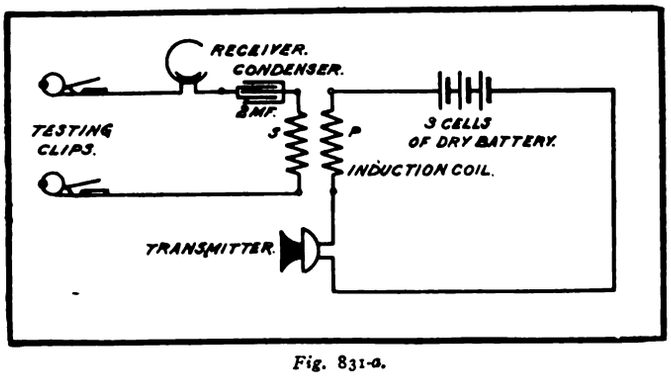

Fig. 831-a.

In the event of testing out a cable in which the pairs are not designated, one test point may be grounded or connected to the cable sheath at each test instrument, thus testing out the wires separately.

If the assistant be one of the genus "pretty much asleep" an occasional throw of the switch to point No. 2 will serve as a gentle reminder for him to get on the job.

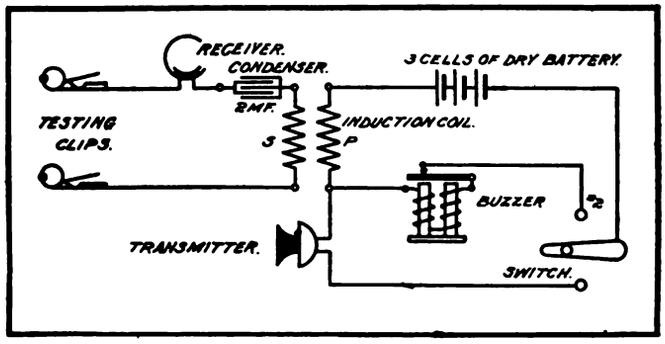

Fig. 831-b.

USE OF TEST RELAY.—(832).

Will you kindly explain to me what is meant by the test relay in a telephone circuit and what it is used for? J. R. B.

The test relay is used, ordinarily, in a trunk circuit, although it is sometimes used in a toll cord circuit to give the operator the customary notification of the busy condition of a line when she touches the sleeve of its jack with the tip of her plug by causing a click to be heard in her telephone receiver. As is well known, in the ordinary subscriber's telephone circuit, this click is produced by the passage of a current directly through the receiver. In a trunk circuit, however, it is necessary to provide an auxiliary device, as the operator's receiver is not bridged directly across the cord circuit, as it is at a subscriber's position. The operator receives all her instructions over a separate circuit known as the order wire circuit and has no occasion to connect her telephone set with the cord circuit over which conversation is passing. The test relay is therefore provided and so wired that when the tip of the plug is connected to the sleeve of a jack associated with a busy wire, the difference in potential which exists, due to the busy condition of the jack tested, causes the operation of the relay. The armature and contacts of this relay are so connected in the operator's telephone circuit that when the relay is energized the desired click is produced in the operator's receiver. The special method of doing this does not greatly matter, as it is accomplished in a considerable variety of ways, such as by short circuiting a section of an induction coil or condenser.

The test relay is usually so connected with the circuit to the tip of the plug as to be connected with it when the trunk is not in use, and as soon as the plug is inserted in the jack, a change in the contacts of another relay, controlling the test relay circuit, disconnects the test relay from the tip and completes the circuit from the tip of the plug to the tip wire which is connected to the subscriber's switchboard at which the call originates.

FACTS CONCERNING OAK AND LOCUST INSULATOR PINS.—(833).

Managers of telephone companies who have used oak and locust insulator pins are invited to send in any facts which they may have observed which will shed light on the question of their comparative life and behavior under loads. The United States Forest Service has made some very interesting tests, the results of which were described in our issue of February 2d. Since that time there have been numerous requests for the experience of practical men with these two kinds of wood. THE AMERICAN TELEPHONE JOURNAL will be glad to receive suggestions from men in the field, which may be published for the benefit of their associates.

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THE EDITOR'S PAGE

THE PASSING OF THE BATTERY WAGON.

WHEN we look back at some of the ways things were done in the good old times, and then recall that these methods have somehow been abandoned and nearly forgotten, we don't wonder that the business has grown. A business that would voluntarily renounce those barbarisms ought to grow. The battery with the richly colored fluid for subscribers' stations is an example.

When these were very extensively in use each inspector had to carry a jug in his outfit. Of course, at the present day the man who has to carry a heavy kit of tools, screws, cleats, and, worse than all, a coil of wire, is a victim of a sad destiny. But suppose he still had to carry all this and a good, substantial jug into the bargain. And maybe a glass jar, in slippery weather, along with the jug. Oh, these are easy times for the outside man?

Now, people talk about slow farmers' line development. It's too bad for the farmer, and a sad thing for the town person who likes to order his fresh eggs and vegetables by wire, that the rural telephones have not been giving this service for a longer time. But for the man who renewed the batteries there may be a few compensations, especially where transportation facilities were poor and there was a walk of a mile or two from the lonely railway station, with only the jug for company. It's lucky that it could always be brought back empty.

Then what a trouble this stuff was in a house. If all the instructions could be brought together they would in a very few years be interesting bits of telephone history. Mats and neutralizers, and any quantity of appliances for protecting things from this awful fluid. But if anything broke it always got away. Then the immediate question was how to get the damage repaired and the subscriber mollified before word got in to the manager at the central office. The subscribers in towns used to watch for the wagon that brought the battery renewers with a certain awesome fear, and wonder what would come next. Those were the times when the telephone man had the wholesome respect of subscribers on two scores. He was a chemist and an electrician, and often stood next to the doctor in the estimation of the rural patrons. Still, its a good thing that the battery with the dangerous acid is passing out of use. It was, after all, a very troublesome thing, and it is a wonder that people bore with its inconveniences and expense as patiently as they did.

THE SOURCE OF INVENTIONS.

SPECIALIZATION of effort is productive of the highest efficiency in certain lines of work, but it is sometimes looked upon as the cause of other tendencies in an industry which are not so beneficial. Numerous as are the patents which are from week to week granted on devices intended to come to some use in a portion of the broad telephone field, it is notable that so very large and predominant a proportion should be granted to men connected with the manufacturing rather than the operating companies. There is a very practical advantage in this—namely, that the manufacturing inventor experiences a comparatively trifling difficulty in getting his goods on the market, and, in these days of rapid development, is about as little troubled by the problem of selling them once they are produced. This condition must be one which will have a deterring influence upon the men who cannot give to themselves such assurances of an immediate opportunity to try out the merits of their work, but why it should come so near to keeping them completely away from the field of invention comes very close to being a mystery. In these days there are very few inventions of the "happy thought" type which are likely to be profitable. The things that pay, and pay because they have real merit and represent a real advance, are likely to have been developed slowly. This developing process usually takes the form, in the first place, of an investigation of certain conditions connected with some branch of the telephonic art where the results obtained are so small in proportion to the effort expended as to indicate a low efficiency, and consequent waste. Once the patient developer believes he has a thorough understanding of the things which are and the things which should be, he is ready to start in on his machine. Then the money begins to fly. Is this where the operating men draw back? It doesn't seem right that it should be, for in the long run they are the people who have to pay the bills before the expense gets shifted along to the subscribers. It is a great deal more probable that they are completely cowed by the assumed importance of sticking tightly to their own specialties.

The manufacturing expert has the whole field for his specialty. In order to sell his goods they must be of the sort which will appeal to the man who knows how things should be done, as devices which will help him to accomplish his objects. So the manufacturer is absolutely driven to study the operating side of the industry, and to become so familiar with it that he looks upon it with the eyes of an expert. He sees what it needs. Here he has risen to the level of the expert who has acquired his whole training as an operator. They are for the moment on equal terms. Then the manufacturing engineer steps aside, and after a while comes back to the operating man, who is doing his work in the same old way, and says, "Here is something which will help you to do it better."

Now, if the operating man is where he can be the first to know what is needed, and often tells his friend, the manufacturer, what must be done, why is it that he has not what is practically a head start when it comes to a race in bringing out an improvement? He is just as well able to study mechanical and electrical constructive processes as his neighbor to find out how they are used. Still he lags behind. It is the other man who brings the two kinds of intelligence together and makes them productive. There is a chance for some people to think about this.

A RAP AT MUNICIPAL OWNERSHIP.

IN Chicago a few days ago the committee which is investigating telephone conditions heard the report of a witness who is said to have travelled extensively in Europe and made a careful study of operating conditions there. His statements are said to have been of a nature to throw cold water on the hopes of any persons who have entertainted the idea that Chicago could find a way out of her difficulties by acquiring a telephone system to be operated under government control.

The witness drew attention to the comparatively low development and slow progress made in a large number of countries. In many places, and notably in Paris and some other cities in France, the service is so poor that there is no fairness in comparing it with that given in American cities. It is true that rates in Europe are lower, but this is due to the extremely low wages paid to workmen and operators of all classes.

Even under government ownership, and with no expense for obtaining new business, which is an important factor in American methods, many of the European systems now find themselves in difficulties. In Austria it was recently decided to raise rates to a figure very close to what prevails here.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

PAYMENT FOR FRANCHISE.

Referring to your "The Telephone in the Courts" and invitation contained therein, we submit the following. Section 16 of our franchise reads as follows:

"That said (giving incorporators) guarantees herein, and their assigns, agree that after the passage, and during the life of this ordinance on the 1st day of April of each year they will make a sworn statement and place the same on file with the city clerk of said city, of the gross receipts from rentals received by them or their assigns from their exchange, and will pay into the city treasury of said city two per cent. of the same."

The Bell Company does not pay a dollar into the city treasury under its franchise and is getting about 40 per cent. more for service. Now the wise ones who legislate are not satisfied with what they get from the only corporation which pays them anything, but propose to make us pay 2 per cent. on gross tolls also, when, according to our idea, as no toll lines existed that the framers of the ordinance did not contemplate tolls and certainly did not mention them. Do you know of anything similar? G.

THE ordinance from which you quote certainly does not contemplate a payment of 2 per cent upon tolls, so that any legislation by the city authorities imposing a fee of 2 per cent. on gross tolls would be invalid. The 2 per cent. you pay on gross receipts from rentals is not a tax, but is in the nature of a remuneration to the city for the franchise it has granted you. The granting of a franchise, and your acceptance of it constitutes a contract which is irrevocable by the city, and any further legislation to impose additional burdens upon the telephone company would impair the obligation of the contract, in the sense forbidden by both the State and National Constitutions, and hence be unconstitutional. Hockett vs. State, 105 Ind., 250; 55 A. R., 201.

RIGHT TO ORGANIZE UNDER TELEGRAPH INCORPORATION LAW.

Is a charter granted to a telephone company, under the law providing for a telegraph company, valid? The law provides that corporations may be formed "for the constructing and maintenance of a telegraph line." No mention being made of the telephone. S. A. R.

THE courts usually hold that the term "telegraph" as used in statutes includes "telephone" and that a charter may be granted to a telephone company under the general law authorizing the incorporating of a telegraph company. In one case the court stated the reasons as follows: "They are both designed to convey intelligence between distant places. So far as the owner over whose land their tracks or routes lie, they each are operated with the same appliances. Poles and wires placed alike impose exactly the same servitude upon the land. With the change in the apparatus at the termini, telegraphy becomes telephony. The former makes the distant message intelligible by words, marks or sounds; the latter by sounds alone. The same electric fluid is the medium of transmission, and all the internal structures are the same in both. The corporation employing either means of communication is executing substantially the same public function in substantially the same way."

DAMAGES FOR FAILURE TO GIVE TELEPHONE SERVICE.

A PRACTISING physician in the City of Vicksburg, a subscriber to the telephone service of the Cumberland Telephone & Telegraph Company, brought suit against the company for damages for having his telephone service suspended. He alleged that he had been called by an employee of the company to attend a lineman, and that this employee assured him the company would pay the bill, but that his bill was not paid, and when the company's bill for telephone service was presented, he instructed the collector to have the amount thereof deducted from his bill for professional services to the lineman, which message the collector said he would deliver to the manager. He also averred that he had no notice of the suspension of his telephone service. He brought suit for punitive damages, and for actual damages caused by loss of practice. To prove his loss of practice he was permitted to tell on the witness stand that certain persons whom he named had afterward told him that they had tried to reach him over the telephone to secure his professional services, but found that his line had been cut off. He recovered a judgment which was set aside by the Supreme Court of Kentucky on the ground that the evidence of damages was entirely hearsay. Cumberland Tel, & Tel. Co. vs. Hicks, 42 S., 285.

MINNESOTA VILLAGES MAY EXCLUDE TELEPHONE COMPANIES.

ACCORDING to a decision by Judge Lochren, the Northwestern Telephone Exchange Company has lost its suit to enjoin the city of St. Charles, Minn., from preventing its installing a telephone exchange there.

The court holds that, under the legislative act of 1893, cities and villages have authority to admit or keep out telephone companies as they may desire.

STRIKING EMPLOYEES ENJOINED.

ON petition of the Cumberland Telephone and Telegraph Company, the United States District Court has granted a temporary injunction at Memphis, Tenn., restraining the striking employees of the company from frequenting the buildings or other property of the Cumberland company. The strike of the telephone girls had been carried to other classes of employees and some trouble was feared. A few days after granting the injunction Judge McCall heard the petition for permanent injunction, but dissolved the first injunction, except with reference to two employees. He has since been asked to enjoin members of the Electrical Workers' Union, which has taken up the fight of the girls, from visiting the plants and buildings of the company, but this case has not been disposed of. General Manager Leland Hume, of the Cumberland company, declares that nothing will be conceded the strikers, and that they have all been discharged.

INTERFERENCE WITH FARMERS' LINE AS A MISDEMEANOR.

THE Supreme Court of Missouri has held that an appeal to the Kansas City Court of Appeals is not transferable to the Supreme Court merely because a question is involved as to whether Rev. St., 1899, Section 1261, making it applies to lines owned by individuals. The statute referred to makes it a misdemeanor to interfere with telephone lines. The question was raised in the prosecution for a misdemeanor of Clark McKee and Jesse Allen, who were charged with interfering with a farmers' telephone line, it being owned by a co-partnership. The men were convicted, and had the case removed to the Supreme Court of the State, which refused to interfere and sent it back to the Kansas City Court of Appeals for final decision.

State vs. McKee, 95 S.W., 401.

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IN THE OPERATING FIELD

NEW SYSTEM SUCCESSFULLY OPERATING AT STATESVILLE, N. C.

AFTER a vigorous struggle with the Bell Company, the Iredell Telephone Company, at Statesville, N. C., is operating its Independent telephone system with considerable success. Although the service has just been started, there are said to be as many subscribers connected to the Independent lines to-day as the old company, now under Bell control, has obtained since it started in business at this place years ago. It is reported that in many of the business houses and residences the old telephones have been cast aside, and that they have been taken back to the Bell exchange by wagonloads.

The Independent company has among its stockholders and officers the leading business and professional men of the county. Practically all the business men, lawyers and physicians are now subscribers for Independent telephones, and they have also been installed in a large number of residences. The reports of the success of the new company in the telephone field have attracted wide attention in the South. For years the Bell people have tried to get into Statesville, but each time they appeared before the city aldermen they were refused a franchise. The local company which was formerly operated there had a franchise under the terms of which it could not sell to the Bell company. Eventually the owner of this original local system offered it for sale, and being unable to come to satisfactory terms with Statesville people, asked for a new franchise which would enable him to borrow money to continue in business, and enlarge the capacity of the exchange. The new franchise was without the restriction contained in the old one, and the exchange was soon sold to the Bell company. The sale was kept secret for two months, but when knowledge of it eventually came out many people were highly indignant, and steps were immediately taken to organize a company to build a new system. In the mean time the Bell company spent a great deal of money on construction work in an endeavor to stop the proceedings of the new company, and this is the work a part of which is now being taken out.

WORK STARTED ON INDEPENDENT SYSTEM IN WILLIAMSON COUNTY, TENNESSEE.

THE Home Telephone Company has taken quick advantage of the new State law in Tennessee and has begun constructing a county system in Williamson county, Tenn., with Franklin as the central office. For two years the company has endeavored to get into Franklin, but the Cumberland Telephone Company, with various forms of injunctions, has kept it out. The new law in Tennessee permits a "public utility of a general character" to use the streets or public roads anywhere in the State. Ten lines will be run out of Franklin to various points in the county.

CONTINUOUS ADVANCE AGAINST BELL OPPOSITION REPORTED BY COMPANY IN EASTERN NEW YORK.

AT Hoosick Falls, N. Y., the Eastern New York Telephone & Telegraph Company was organized in 1902. Immediately the Bell company attempted by all methods known to keep the Independent concern from building up its business, but its efforts have been wholly in vain. Although, as is the case with all other companies, the Eastern New York Telephone & Telegraph Company occasionally loses a telephone, throughout the entire period of its existence there has only been one interval of three months in which there has not been a net gain. At the present time the company has in the town of Hoosick Falls, with a population of 6,000 people, 425 telephones, and by means of toll connections with the Commercial Union Telephone Company, at Troy, gives service over a wide territory.

Rates for service are $2 per month for a private line, $1.50 for a three party line, and $1 per month for four or more party line service. The company maintains the same capitalization as when organized, $50,000, of which $25,000 is invested. The money was fully subscribed by local people, and the active management is also in the hands of home parties. The officers of the company are: Watson M. Holmes, president; Francis Riley, vice-president; C. B. Story, treasurer; G. Frank Rising, secretary. Much of the success of the company is ascribed by the management to the use of a special party line system with automatic signaling of the central office, and local talking battery, and a lockout feature. This is a service that is especially popular, and cannot be duplicated by the Bell company.

A TELEPHONE SYSTEM IN THE FAR NORTH.

MAIL advices from Skagway tell of a telegraphone system which is now being operated successfully in the Arctic regions. Skagway and White Horse are now connected by a telephone system, which has been installed by the operating department of the White Horse & Yukon R. R., so that Superintendent Hahn can sit in his office and discuss matters with any of his foremen. This system can also be used from any point along the line of railway. The telegraph wire is utilized for this long distance telephone system —the longest one in Southern Alaska. Every train on the system carries an instrument, which can be attached to the telegraph wires and immediate communication obtained by hooking a pole containing two wires over the telegraph line. One of the wires is attached to the instrument in the baggage car, while the other is fixed to the rails to furnish a ground for the return circuit.

INDIANA COMPANY RE-ELECTS SUCCESSFUL MANAGING OFFICERS.

AT Anderson, Ind., the stockholders of the Delaware-Madison County Telephone Company came together from the various cities in which they live, including Indianapolis, Fort Wayne, Muncie, Elwood and Alexandria, for their annual meeting. The annual reports of the officers indicate that the past year has been the most prosperous in the history of the company.

Not only was a dividend declared, but the company is now in a position to take up some important plans for the improvement of its plant and service. A lot in Anderson is to be purchased and a new building erected upon it for the company's exchange, and the extensive rebuilding of the outside plant is to be undertaken. There is now a proposition before the board of directors to purchase a line which will serve as a tributary. The company has now over 4,000 subscribers, and the extension of its lines during the coming year is expected to add many more.

The election of officers resulted in retaining the old board, as follows: President, George W. Beers, Fort Wayne; vice-president, W. H. Quick, Anderson; secretary, T. F. Rose, Muncie; treasurer, W. E. Hitchcock, Muncie, who, with A. L. Johnson, of Muncie, constitute the board of directors. Among the stockholders present were: Messrs. Swift, of Indianapolis; Geo. W. Beers, Max Fisher, W. R. Culbertson, and S. E. Evans, of Fort Wayne; T. F. Rose, W. E. Hitchcock, and E. B. Cod, of Muncie.

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With **GRAY PAY STATIONS** you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

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For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

FOR SALE CHEAP—100 series telephones with Ericsson transmitters and Holtzer-Cabot generators. Good as new. Address R. Valentine, Pres., Independent Telephone Ass'n of Wisconsin, Jamesville, Wis. 783

FOR SALE—500 single pole telephone receivers; 75 Stromberg-Carlson 4-bar hand generators in oak boxes, new; 900 pair 16 ohm electro-magnets, good ones. Auburn Telephone Co., Auburn, N. Y. 792

FOR SALE—Portable gasoline power winch complete: built for pulling cable. Will do the work of five men. A bargain. Write for description. J. W. Wright, 1304 Arch street, Philadelphia, Pa. 797

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WANTED—First class wire chief for common battery plant, New York State. None but first class man need apply. Address, stating experience and references, Box 785, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 785

WANTED—A young telephone man, college graduate preferred, in the literary department of successful concern. Salary to start will necessary be small, but work offers exceptional opportunity for growth. Address, Box 790, care AMERICAN TELEPHONE JOURNAL, 100 William Street, New York. 787

WANTED---Continued

WANTED—Young college graduate, with some operating or traffic experience, for special work. State full particulars, education and experience. Address, care AMERICAN TELEPHONE JOURNAL, 100 William Street, New York. 789

SIDE LINE—We have an attractive proposition for traveling salesmen calling on telephone exchanges. Vest pocket sample. Address, P. O. Box 374, New Haven Conn. 790

POSITION wanted by all around telephone man as line, instrument, and switchboard troubleman. Capable of managing exchange and construction work. Good reference. Address, Box 793, care American Telephone Journal, 100 William Street, New York. 793

WE are constantly in need of experienced men to work on high grade telephone apparatus, particularly assemblymen. The Wire & Telephone Company of America, Rome, N. Y. 794

WANTED—Wire Chief. Galesburg Union Telephone Company, Galesburg, Ill. 795

CABLE SPLICER wants position. Experienced. Best references. Address, Box 796, care American Telephone Journal, 100 William Street, New York. 796

WANTED—Experienced telephone solicitors. Zenith Telephone Company, Duluth, Minn. 798

WANTED—A man with three years' experience as switchboard installer and four years as Superintendent of Construction, wants a position as Manager or wire chief of a common battery plant. At present employed as installer but is married and desires a local position. West or northwest preferred. Address Box 774, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 774

Poles Must be Anchored

The question is how to do it. Why not adopt the modern D. & T. way?

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can be driven anywhere any time of the year. They pull against solid earth and hold as well as a dead man.

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Write To-Day For Samples and Prices. Toll Bills. Rental Bills

Form G-90.	For Small or Branch Exchange use; carries account for 2 years.
Form G-90-A.	For Large and Medium City Exchanges and Systems of Exchanges; the most complete form made.
Form G-90-B.	For City Exchanges having many Rural Lines.
Form G-90-C.	For City Exchanges, Rentals and Toll Charges separated.
Form G-90-E.	For Small Exchanges, Rentals only.
Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
Form G-90-H.	One subscriber to a sheet; carries account 12 years.
Form G-90-I.	For Small Exchanges; Bound Books; carry 12 subscribers on a page for 1 year.

THE Edwards-Hine Co.

TELEPHONE SYSTEMATIZING DEPT.

5 and 7 PEARL STREET (EAST), GRAND RAPIDS, MICH., U. S. A.

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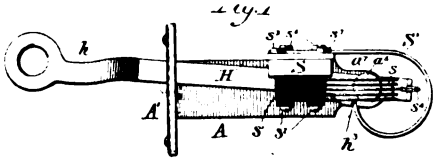
TELEPHONE PATENTS

TELEPHONE HOOK SWITCH.

Ernest W. Brackett, Elyria, O., patents (No. 845,848; dated March 5th, 1907; filed March 31st, 1904; serial No. 200,900) and assigns to the Dean Electric Company, Elyria, O., a telephone hook switch.

The hook switch described in this patent has as a frame a single piece of metal stamped into the shape indicated at *A*, having its transverse front portion bent at right angles to the longitudinal part to support the escutcheon A^1. At the rear end of this frame, at its upper side, a piece is bent over to a horizontal position, and suitably punched to receive the screws which



support a small block in which the switch springs are retained. A pivot pin a^5 is also supported on this frame. The pivot pin is grooved for the reception of a slot in the switch hook *H*. This switch hook is constructed with a slot h^3 adapted to be engaged by the curved spring S^1, one end of which is retained by the machine screws S^3 passing through the horizontal shelf which forms part of the main frame work. This spring engages slot h^3 on the outward side of the hook lever and a little to the left of the pivot, so that it not only tends to throw the forward end of the lever upward, but also to retain it firmly on the pivot.

The contact springs are assembled in parallel relation, with interposed slips of insulating material s^1, and secured by screws s^2 to the metal block *S*. This block in turn is secured to the flange of the frame by screws s^3. Spring s^4, which lies in a slot in the end of the lever, serves to control all the contacts.

TELEPHONE APPARATUS.

Garrison Babcock, Rochester, N. Y., patents (No. 837,534; dated December 4th, 1906; filed August 31st, 1905; serial No. 276,496) and assigns to the Simplex Telephone Equipment Company, Rochester, N. Y., telephone apparatus.

This patent covers a combination of a transmitter and receiver with a battery arranged in a box which is provided with a cut-out switch, and made of such size and shape as to be readily carried in the pocket. The transmitter and receiver are mounted in a single frame, but each is provided with separate cord connections. The instrument is especially adapted for the use of a deaf person, who can receive a communication from another person by handing him the transmitter to speak into while holding the receiver to his own ear.

TELEPHONE HOOK SWITCH.

Ray H. Manson, Elyria, O., patents (No. 846,120; dated March 5th, 1907; filed March 31st, 1904; renewed January 30th, 1907; serial No. 354,910) and assigns to the Dean Electric Company, Elyria, O., a telephone hook switch.

This patent covers a method of controlling the movement of a switch hook lever mounted on a frame, and used in connection with a group of springs, of a type similar to that described in patent No. 845,848. In this mechanism, however, the curved spring acts upon a stub lever pivoted upon the same pin as the hook lever. This stub lever extends forward between the hook lever and its frame. At a point in front of the forward end of the switch springs the stub lever has a projecting member extending at right angles to the frame beneath the hook lever, with notches in which it is adapted to engage. This construction when once the hook lever has engaged the pivot, and been engaged by the stub lever, makes it impossible to withdraw the hook lever from the outside of the case, but it may be very readily removed from the inside of the case by depressing the spring actuated stub lever. This allows the hook lever to be very easily removed without the use of tools, when such action is desirable to facilitate the packing of instruments for shipment.

SUBSCRIBER'S BUSY SIGNAL.

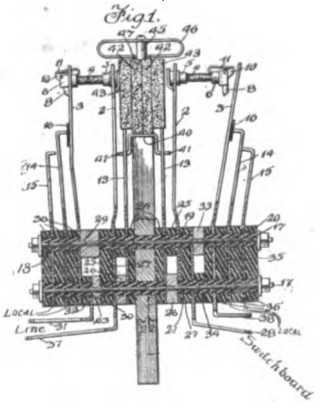
Isidor Kitsee, Philadelphia, Pa., patents (No. 844,811; dated February 19th, 1907; filed October 14th, 1905; serial No. 282,817) a subscriber's busy signal.

The inventor proposes to install a device at each subscriber's station on a party line which will indicate at any time whether the line is busy or free. To do this on a common battery system he describes a method of bridging a high resistance coil of not less than fifty thousand ohms across the hook contacts. When the line is in use coils at all stations will be short circuited and an annunciator mechanism connected to the armature will show that the line is busy. At times when the line is not short circuited through the closure of the contacts at the hook switch all signals will be receiving current from the battery, their armatures will be attracted and the "free" signal will be displayed.

ELECTRICAL PROTECTIVE APPARATUS.

Charles A. Rolfe, Rochester, N. Y., patents (No. 845,010; dated February 19th, 1907; original application filed April 21st, 1902; serial No. 104,021; divided and this application filed February 4th, 1905; serial No. 244,238) and assigns to the Rolfe Electric Company, Rochester, N. Y., electrical protective apparatus.

This patent covers a method of mounting protective devices



described in the same inventor's patent serial No. 104,021. A supporting plate 1 has mounted upon it a combination of springs holding the operative parts of the protector, the whole being secured in place by screws 17, 17. Spring arms 2 2, 3 3, support heat cartridges, which are so mounted as to prevent the springs from flying apart owing to the tension under which they are placed. The heat cartridges consist of a graphite stick 4, supported between caps 5, 6, each of which is slotted to engage a corresponding supporting spring. Cap 6 has a swinging piece

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B. S. BARNARD, President.

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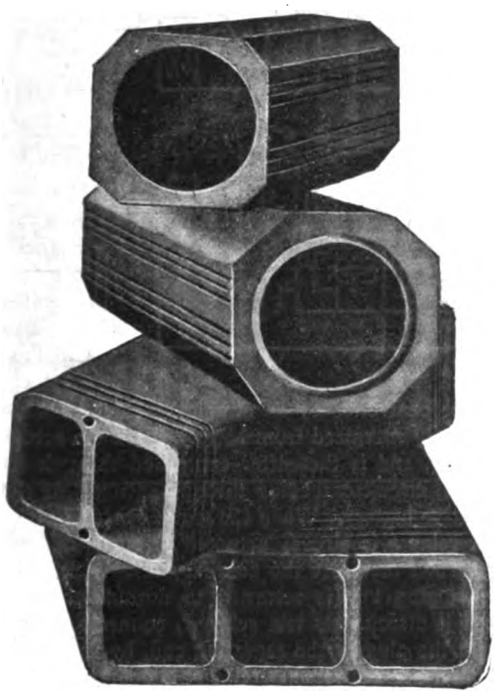
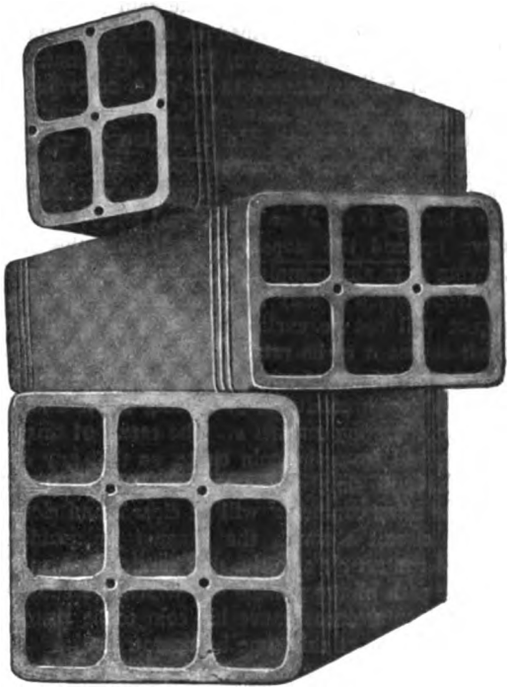


SINGLE DUCT
3½ inch Round Bore
3½ " " "
4 " " "
3½ " Square "
3½ " Round "
(Socket Joint)

MULTIPLE DUCT
2, 3, 4, 6 and 9 Duct
3½ inch Square Bore
3½ " " "

MULTIPLE DUCT
2, 3, 4 or 6 Duct
3½ inch Round Bore



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Montreal Light, Heat & Power Co.
Bell Telephone Co., U. S. A.
Bell Telephone Co., Canada
Pennsylvania R. R. Tunnel, N. Y. City
Trolley Tunnels, N. Y. City
Rapid Transit Subway, N. Y. City

ANNUAL CAPACITY:

40,000,000 Duct Feet

WRITE FOR CATALOGUE

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PATENTS—Continued.

8 mounted in a vertical slot in the middle of the end. This is normally retained in position by soft solder. When a heavy current passes through the cartridge it heats the graphite, melts this soft solder and allows the piece 8 to turn, releasing spring 3, which flies outward. The immediate action of spring 11 upon projection 10 causes piece 8 to return to its original position.

COIN COLLECTOR.

Frank R. McBerty, Evanston, Ill., and James L. McQuarrie, Chicago, Ill., patent (No. 845,370; dated February 26th, 1907; filed January 23d, 1903; secial No. 140,266) and assign to the Western Electric Company, Chicago, Ill., a coin collector.

This patent covers a method of handling pay station calls which requires that before the user of a telephone instrument can call an operator he must deposit a coin. If connection is made this coin comes under the control of the operator, but if no connection is obtained the control is retained by the subscriber, who may cause the mechanism to return the coin to him. The mechanism of the box is fully described in another patent. Its main features consist of a magnet *a*, having an armature which may be partially or fully attracted to its pole, according to the strength of the current passing through it. This armature controls stops in the path of the coin. In operation when the subscriber removes his telephone from the hook and deposits a coin, if the line is already busy magnet *a* will be excited by current from either battery *b* or b^1 at the central office; the armature will be drawn up and the stops removed from the path of the coin, allowing it to slip completely through the apparatus to the open slot from which it may be recovered. Ordinarily, however, the magnet will not be excited, and the coin will strike the stops, which causes it to be retained within the box. It will close the contacts c^1, thus completing the circuit from conductor 1 to ground through conductor 3, causing the line lamp to be lighted, and also operating magnet *a*. The result of this is that the stops are removed from the coin chute, so that any coin subsequently deposited will simply pass through the chute and be returned. Also the relay contact a^3 will be closed, and close shunt 4, maintaining circuit through the magnet independent of the coin actuated contact c^1; also the stop carried by arm a^1 will be moved into the path of the plunger by which the subscriber may under proper circumstances cause his coin to be restored, so that this plunger cannot at this time be operated.

Until the operator answers the supply of current to magnet *a* can be cut off at contacts a^3 and c^1, and the subscriber may then recover his coin; but when the operator plugs in battery b^1

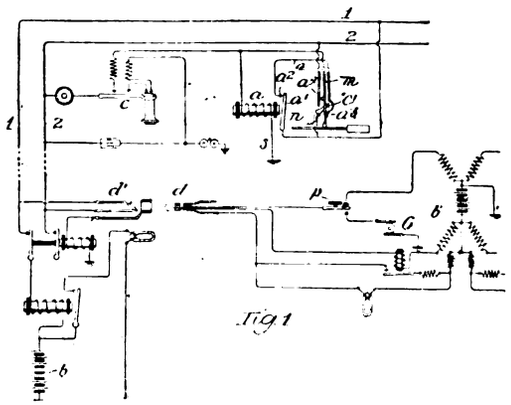


Fig 1

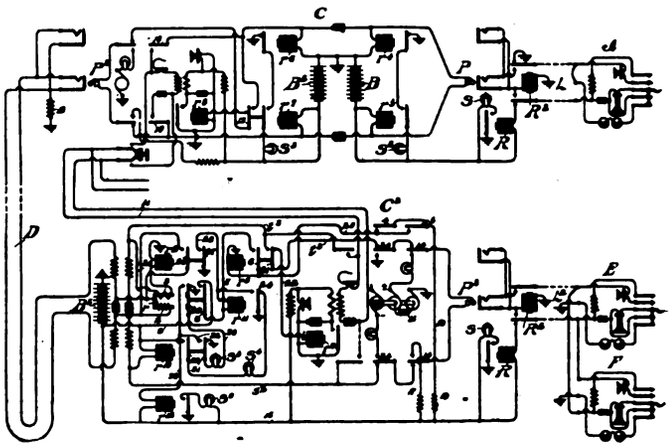
is applied to limb 2 of the telephone line, and the initial movement of the plunger will connect magnet *a* direct with this limb 2 at contact a^4, so that the magnet will remain excited to lock the refunding mechanism.

After the connection is completed, if the coin is to be deposited the operator will apply a special strong current from generator *G* by depressing key *p*. Magnet *a* will become strongly excited, drawing up its armature, and allow the coin to pass into the coin box. If the coin is to be returned the operator will tell the subscriber to wait a minute and then push the restoring button. She then takes down the connection, after which the subscriber by pressing the button may break the contact a^3, releasing magnet *a* and effecting other changes which cause the coin to be restored.

TELEPHONE TRUNKING SYSTEM.

William W. Dean, Chicago, Ill., patents (No. 841,769; dated January 22nd, 1907; filed February 6th, 1903; serial No. 142,114) and assigns to the Kellogg Switchboard & Supply Company, Chicago, Ill., a telephone trunking system.

In this system, which is of the general type of certain previous systems designed by the same inventor, there is included a test



relay r^5, adapted to be controlled by an auxiliary relay r^3. This auxiliary relay is initially energized from battery B^3 on the actuation of the ringing key, and is thereafter controlled through its spring 6, and a locking circuit extending through spring 8 of the trunk relay *r* to negative battery. When the trunk operator rings on a line the trunk relay *r* is already actuated through its high resistance winding 2, and therefore the auxiliary relay *r* remains actuated after the ringing key is returned to normal position. When it is actuated it disconnects test relay r^5, connects the tip circuit through from the plug to the repeating coil, by spring 21. When the called subscriber answers tip relay r^2 is operated, short circuiting the high resistance winding 2 of relay *r*, but keeping the auxiliary relay r^3 actuated through low resistance winding 3. The auxiliary relay is thus maintained in its energized condition until the subscriber and the A operator disconnect.

ELECTROTHERMAL CUT-OUT.

Frank B. Cook, Chicago, Ill., patents (No. 845,219, dated February 26th, 1907; filed April 16th, 1906; serial No. 311,992) an electrothermal cut-out.

In this cut-out the heating element consists of a cylinder of graphite, to which are secured conducting end caps, preferably attached by electroplating the ends of the graphite and soldering the caps to it with hard solder. One end cap is provided with a threaded stem, which may be secured into a rigid supporting member. The other end cap is provided with an extension having an annular recess adapted to receive the free end of a spring member. This member is placed in engagement with the ring in the cap, being then under tension, and is held in position by some insulating or cementing material, such as a suitable kind of wax.

When a strong electric current is passed through the device and the supporting members forming the terminals of the circuit, the graphite is heated until the wax is melted, permitting the spring member to separate itself from the cap of the heating element, thus breaking the circuit.

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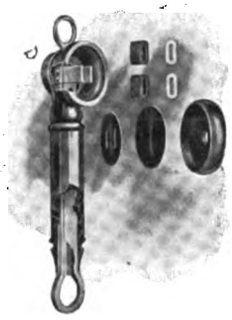

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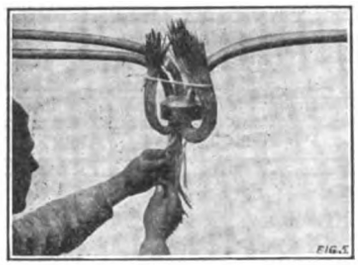

A MONEY SAVER S

YOUR TIME

will earn money in direct proportion to your use of it. The use of the Hargis Cable Splicing Joint will enable you to save time. It will enable your regular linemen to make a better splice than an expert cable man. The picture above shows how easy it is to splice pairs by means of the Hargis Joint. They can all be tied out of the way while the splicing is going on.

The Hargis Joint is not a wiped joint in any sense of the word. The cables are simply put thru the cap and lead gasket and the lead is then poured in until the cup formed by the gasket and the brass cap is full. What wiping is done is simply to smooth off the rough edges, and does not add to the weather-resisting qualities of the joint.

HOW TO SAVE YOUR TIME

Let us send you descriptive matter of the Hargis Cable Splicing Joint shown above. By its use you can make a better splice in less than one half the time it takes to make a horizontal wiped joint, and at the same time you can always get into it by means of special tools to test out for trouble along the line.

It will pay you to write for our descriptive matter.

W. N. MATTHEWS & BRO.

Manufacturers of Patented Money Saving Specialties

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ONE-SLOT PAY STATION

A BLIND MAN CAN USE IT

NO LEVERS

to pull and no work for subscriber except to drop his coin.

BELL-METAL RESONATOR

Insures Operator recognizing the Loud, Clear Signals.

Ask for Particulars

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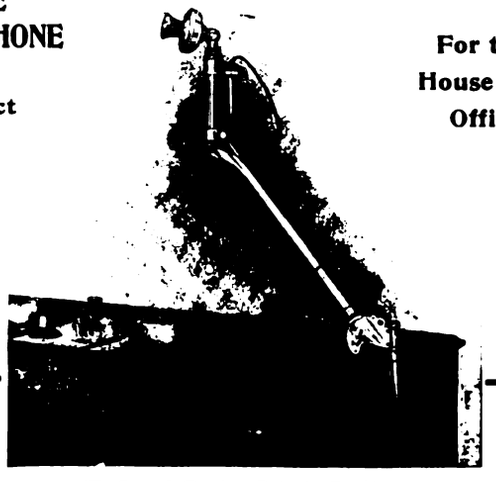
For the House and Office



(U. S. and Foreign Patents Pending)

Where You Want It—When You Want It—And Never In The Way

Cuts Maintenance Cost in Half

MAKES DIVIDENDS GROW

Self-Balancing in any position—Cannot Fall—No Breakage—No Cord Troubles. : : : : : The Switch mechanism is perfect. All joints soldered excepting Platinum contact points. : : Simplicity, Quality and Accessibility unequaled anywhere. : : : : : : : : : : : : : : : : : :

Leading makers of Standard instruments will supply the "Flexiphone" equipped with their own Transmitter and Receiver when desired.

HOLTZER-CABOT ELECTRIC CO., Boston, Mass.
General Sales Agents for New York and New England.

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General Sales Agents for the Atlantic, Gulf and Western States and Foreign Countries.

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General Sales Agents for the Middle West.

Send for illustrations of the finest Pedestal and Switch Mechanism ever made

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IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

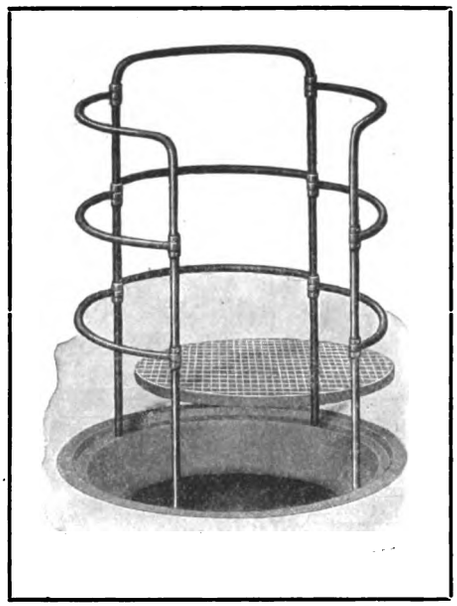
GUARD RAIL FOR PROTECTION OF MANHOLES.

PROTECTION to workmen in the manholes and horses and pedestrians on the street is assured by the new manhole guard rail, an illustration of which appears on this page. It is always a provoking problem to the construction foreman to provide such protection and the use of rail fences for this purpose has been abandoned by all progressive and popular companies. Makeshifts such as this not only do not protect, but they cost more in the end—in time and labor principally. Above all they are unsightly and usually provoke to wrath the traveling citizen who is, of course, the company's means of existence. It has been found profitable to remind these citizens as little as possible of the existence of channels of communication on or under their streets—unless it can be done in a manner favorable to the public service corporation.

For manhole guards recourse was usually had to the village blacksmith or iron master who constructed one of pipes—after a fashion. Maybe the plumber could do it, if he would.

But be that as it may, it is probable that many long-suffering telephone managers will be glad to learn that the Colman J. Mullin Company has specialized on the subject with good results.

The Mullin Company dwells particularly on the fact that this guard rail is made strong, light and that it is readily interchangeable from one manhole to another. Also that it insures a perfect guard and protection while the splicer or other workman is in the well-hole. Prices and catalogues describing this and other well-known Mullin telephone construction specialties may be had by addressing the Colman J. Mullin Company, 430 Kent avenue, Brooklyn, N. Y.



Manhole Guard Rail Made by the Colman J. Mullin Co.

WAGNER MOTOR CYCLE COMPANY, St. Paul, Minn., has a special proposition to make to telephone managers for the placing of the Wagner motorcycle for use of telephone trouble and repair men.

F. E. KOHLER & COMPANY, Canton, O., manufacture the universal post hole digger, which is claimed to be just the thing for digging holes to take telephone poles. Advantages mentioned are that it is strong and durable, easily operated, works in all kinds of soil, saves time and money in planting poles. Particulars will be sent on receipt of a request.

FRANK F. HOWE, 502 The Arcade, Cleveland, Ohio, has a patent on a new magneto telephone with novel features. A postal card addressed to Mr. Howe will bring a leaflet explaining why a new company is contemplated among telephone officials for the manufacture, use and sale of them.

THE CENTRAL ELECTRIC COMPANY, Chicago, Ill., makes a point to see that all orders calling for regular material that are received before noon are shipped the same day received. Such prompt attention will be greatly appreciated by the manager in a rush for stock materials.

M. W. DUNTON & Co., Providence, R. I., send free a sample of Nokorode soldering paste sufficient to solder 100 joints.

SOUTHERN MANUFACTURER IS GIVING AWAY SWITCHBOARDS TO ENCOURAGE USE OF TELEPHONES.

IT is seldom that a company gives away a switchboard, but this is what the Sumter Telephone Manufacturing Company, of Sumter, S. C., is doing for a limited time only.

Upon receipt of a letter from those interested in modern telephone equipment, it will be pleased to ship one of its Unitype switchboards complete, ready for use every day in the year.

The instrument above referred to is a very neat and attractive calendar in the exact shape of a modern switchboard. It is adapted to stand on the desk or writing table, and being printed in imitation oak it really represents a miniature switchboard which is useful every day in the year.

JULIUS ANDRAE & SONS COMPANY, 99 West Water street, Milwaukee, Wis., has prepared a folder showing the actual appearance of each different type of telephone which it manufactures. It also brings out some interesting details of generators, ringers, hook switches, etc., embodied in these instruments.

This small folder has upon its cover the statement, "A Good Telephone Costs Only Its Original Price. You Never Get Through Paying for a Cheap One." From the appearance of the instruments made by the company it would appear that it has made this statement its motto, and is doing well in an effort to live up to it.

SOMETHING NEW IN CONDUITS.

A NEW feature in the manufacture of conduits is the application of certain scientific methods whereby a better quality of ducts is produced and uniformity of grade is maintained. The result is a great satisfaction to the engineer because he gets properly vitrified ducts, thoroughly salt glazed, free from cracks, straight, and non-absorptive. With thirty-five years' experience and modern methods the Rochester Sewer Pipe Company is doing this with great success. But it does even more with its effective organization: every duct is most rigidly inspected both before and after burning, all defective ones being rejected; then they are carefully loaded and blocked in cars and breakage claims are said to be unheard of. Engineers contemplating underground work which they want to last and be first class will do well to address the ROCHESTER SEWER PIPE COMPANY, Rochester, N. Y.

M. C. STONE, Washington, D. C., manufactures seamless paper sleeves, particularly well adapted to telephone cable splicing.

ST. PAUL ELECTRIC CO., St. Paul, Minn., carries 2,000,000 linear feet of Washington fir cross-arms in stock at St. Paul, which is a convenient distributing point. The company carries also a full line of construction material.

INDIANA STEEL & WIRE COMPANY, Muncie, Ind., will send samples of wire and prices to purchasers. Their grade of wire, it is said, has been tested with satisfactory results at leading technical schools and has stood most exacting tests by large telephone companies.

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The New Factory of the Century Telephone Construction Company at Buffalo, N. Y.

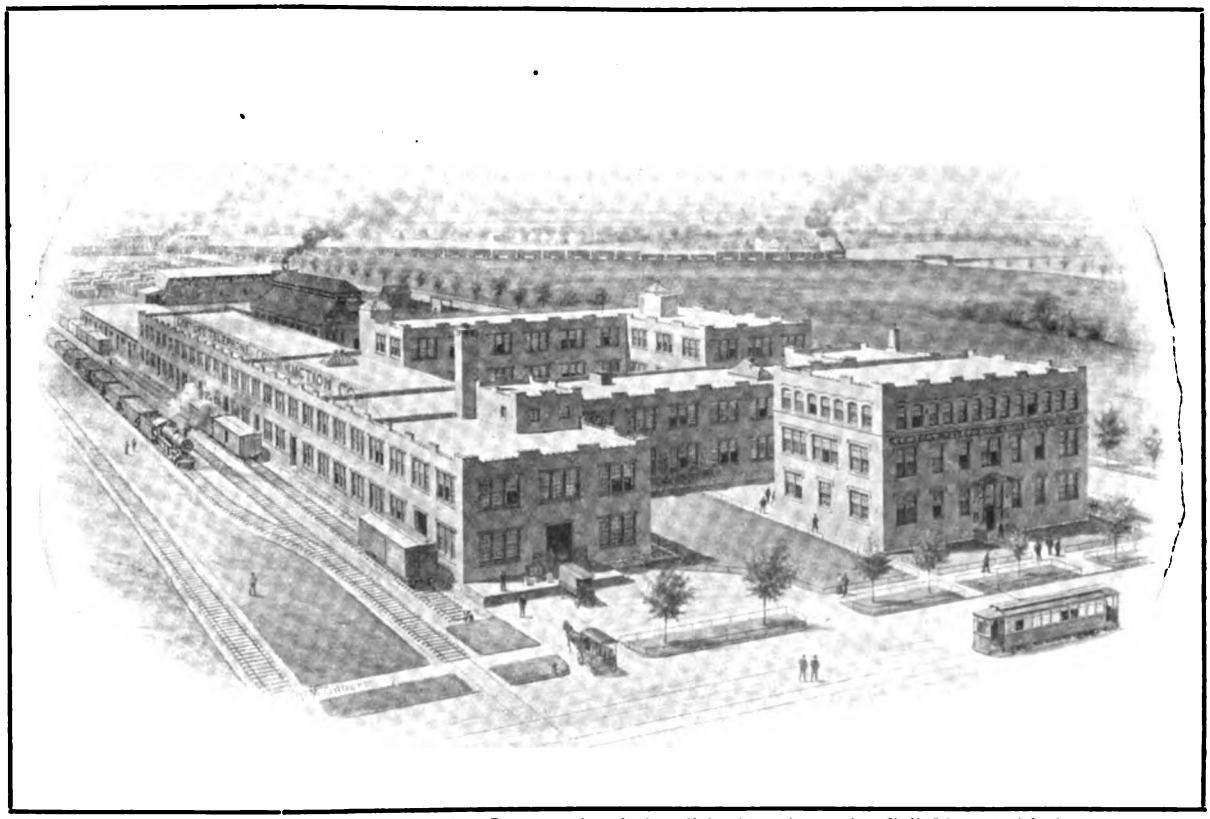
LAST Fall, while the Century Telephone Construction Company was keeping its factory at Buffalo, N. Y., running to its very fullest capacity, it was, on October 6, entirely destroyed by fire. At that time the company was not only engaged upon important work, a large proportion of which was lost in the fire, which burned down the buildings and destroyed the machinery, but also had upon its books many orders which were to be taken up as soon as they could be reached in the course of manufacture. So great was the desire of the company to hasten the completion of the work covering all these orders, on account of the rapid growth of the operating companies which had given them, that it was considered necessary that temporary quarters should be secured and fitted up at the earliest possible date. The management of the company lost no time in taking the necessary action, and within a few days it had not only taken an appropriate temporary factory in Buffalo, but had purchased the stock and equipment of the Williams-Abbott Electric Company, of Cleveland, Ohio. The promptness of this action has been very much appreciated by the customers of the company, who have suffered very little delay in the receipt of their material.

Although the company secured fairly successful results in getting work done under this divided arrangement, it was, of course, an insufficient and unsatisfactory way to handle the entire business of a large concern, and work upon the fitting up of a new factory has been vigorously pushed, having been begun a few days after the destruction of the old building. The company is now almost ready to occupy a new plant, in which it has ample facilities for handling every branch of its work. The buildings are of fireproof construction throughout, and are thoroughly well equipped for every class of manufacture which the company undertakes. These buildings, shown in the accompanying illustration, will be entirely occupied by the Century company. Their location is especially convenient from all points of view, as they are on Elmwood Ave., near Hertel, where they may be quickly reached by visitors to Buffalo via the Elmwood cars.

Equipment is being provided to take care of the manufacture of a complete line of high grade magneto and common battery telephone switchboards and supplies. These lines include the well known Century platinum electrode transmitters, direct current selective systems, private branch exchange and intercommunicating systems, as well as common battery switchboards and telephones, and magneto switchboards and telephones, with special supplies for rural systems which the company manufactures.

In addition to its own well established lines, which have been sold in large quantities throughout the country, the company will now continue to manufacture the supplies formerly handled by the Willams-Abbott Company, and preparations are being made for adding to both of these lines, considerably broadening the scope of the field in which the company will be interested. The entire factory will be fully occupied about May 1, and at that time the company announces that it will be ready and able to handle the manufacture of switchboards of any size and capacity, and all material in any of its other lines in whatever quantities may be desired. Not only will the company manufacture switchboards, but its engineering department is prepared to co-operate in the fullest manner with those who are considering the installation of telephone apparatus. This branch of the organization makes a practice of answering all questions concerning practical telephone work, this service being performed free of charge, and open to any telephone company or manager. Those who wish to take advantage of it have only to forward their inquiries to the company.

The new factory is so located that every advantage in the way of shipping facilities is obtained, and the careful layout of its interior is expected to make it possible to complete and ship orders within a very satisfactory period. As all the forces of the company have been kept busy in the temporary factories, since the destruction of the plant, upon the work of getting out orders then in hand, the organization remains unimpaired, and the company will be able to maintain the same standard of construction which has been so favorably received in the past without the slightest break or inconvenience. At the present time the company is prepared to give full information concerning any of its separate lines of goods, and to take up the consideration of orders of any size.



New Fatcory of the Century Telephone Construction Company, in which will be Manufactured a Full Line of Telephone Instruments and Switchboards.

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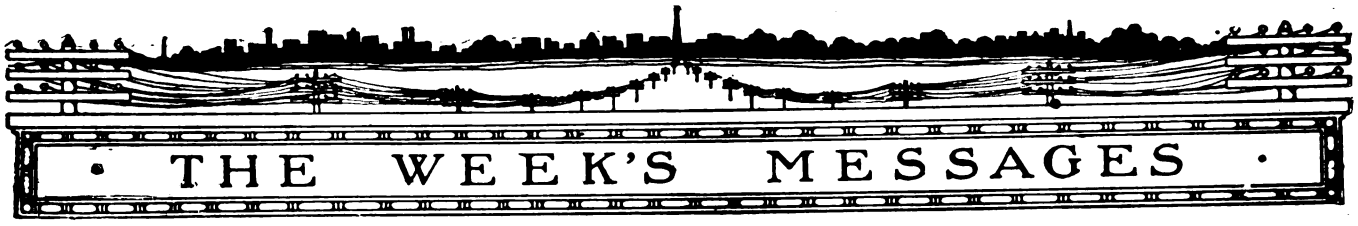

NEW COMPANIES.

YAMPA, COLO.—Articles of incorporation have been filed by the Yampa Telephone Company. It has an authorized capital stock of $10,000 and the incorporators are Arnold Powell, J. B. Male and A. C. Bower.

NEW ATHENS, ILL.—New Athens-Tomorroway Telephone Association has been incorporated with a capital stock of $300. The incorporators are Frank Reisert, John Koch and Fred Stenzel.

PLUM HILL, ILL.—The Plum Hill and Stone Church Telephone Company has been incorporated with a capital stock of $805. Among the incorporators are Henry Sachtelben, John Brinkman and F. H. Luessenheide.

BLOOMINGTON, IND.—The Farmers' Telephone Company has filed articles of incorporation. The capital stock is placed at $2,000 and the following directors have been elected: John Knight, Morton Payne and W. R. Smith.

DUNKERTON, IA.—Articles of incorporation have been filed by the North Dunkerton Telephone Company. The capital stock is placed at $5,000, and the present officers are: President, Thomas Dunkerton; vice-president, H. H. Meyers; secretary and treasurer, F. C. Dunkerton. Directors are Charles Northrup, Fred Schoof and Early Bartholomew.

CROFTON, KY.—Articles of incorporation have been filed by the Crofton and Brushy Fork Telephone Company, the amount of the capital stock being given as $200. Among the incorporators are J. C. Adams, W. L. Goode, J. H. Adams, S. A. Martin, Barney Martin, J. H. Pyle, W. R. Jones and M. Haley.

HANCOCK, MICH.—An Independent telephone company is being organized by the citizens and business men of Hancock. Already $10,000 has been subscribed and it is expected that the capital stock will be increased to $50,000.

MILAN, MINN.—A Farmers' Telephone Company has been organized at Milan, and the following officers elected: L. H. Dalen, president; H. A. Sorenson, vice-president; A. O. Christenson, secretary; T. H. Johnson, treasurer.

MORRILL, MINN.—The Farmers' Telephone Company has been formed by farmers living in the vicinity of Morrill. It is the company's intention to build lines in Morrison County.

HINSDALE, N. Y.—The Hinsdale Telephone Company, with a capital stock of $5,000, has filed articles of incorporation. Among the directors are G. S. Beebe, B. L. Moore, Hugh Taylor, of Buffalo.

SOUTH NEW BERLIN, N. Y.—At a meeting recently held near Gilbertsville an Independent Telephone Company was formed to build a line from South New Berlin to Gilbertsville. The name of the new company is the South New Berlin-Gilbertsville Telephone Company, and the following officers have been elected: President, A. Breffle; vice-president, Thomas Stenson; secretary and treasurer, Samuel Misson.

SMITHFIELD, N. C.—The Johnston County Telephone Company has been incorporated with a capital stock of $10,000. Lines are to be built throughout the county and an up-to-date exchange installed at Smithfield.

JERUSALEM, O.—The farmers of Jerusalem have organized an Independent Telephone Company, to be known as the Jerusalem Telephone Company, with C. H. McFrederick as president; I. B. Carleton, vice-president; B. F. Cureton, secretary; W. W. Mellott, treasurer.

NORWICH, O.—The Norwich Mutual Telephone Company has been organized with the following officers: President, E. C. Ledman; vice-president, J. A. Henderson; treasurer, Frank Haddon; secretary, W. C. Geyer.

NOVA, O.—Articles of incorporation have been filed by the Nova Telephone Company. It has an authorized capital stock of $500, and J. J. Dieter and others are among the incorporators.

TAUPA, OKLA.—The Farmers' Mutual Telephone Company has been incorporated with a capital stock of $5,000. Among the directors are W. S. Kennedy, R. R. Childers, of Taupa; and C. C. Naylor, of Lawton.

BRADLEYTOWN, PA.—An Independent telephone company has been organized at Bradleytown, whose intention it is to build lines to connect with the Petroleum Telephone Company at Wyattville.

EL PASO, TEX.—Articles of incorporation have been filed by the Pioneer Telephone Company. The capital stock is given at $1,000, and the incorporators are William E. and Lewis C. Kindon and Charles C. Brown.

WINTERS, TEXAS.—An Independent telephone company, which has an authorized capital stock of $10,000, has been organized to take over the local plant at Winters. About $2,000 will be spent at once in improvements.

YALE, TEXAS.—The Yale Telephone Company, with a capital stock of $25,000, has filed articles of incorporation. The incorporators are West Keeler, Thaddeus Wilbur and S. J. Spencer.

NEW LISBON, WIS.—The New Lisbon Mutual Telephone Company has been incorporated with a capital stock of $5,000. The incorporators are Albert Klibker, Geo. L. Heath and J. D. Strickland.

RIDGEWAY, WIS.—The Arena & Ridgeway Telephone Company, Ridgeway, has been incorporated with a capital stock of $3,000. Among the incorporators are A. W. McKenzie, A. Hamilton and S. W. Dawson.

MONTEREY, MEX.—An Independent Telephone Company has been formed by Monterey capitalists, whose intention it is to construct lines between the towns of Montemorelos and Reyones. Work will be commenced in a very short time.

FRANCHISES.

MT. ETNA, IND.—Application for a franchise at Mt. Etna has been made by the Majenica Telephone Company, of Majenica.

TABOR, IA.—Application for a franchise has been made by the City Telephone Company.

MIDDLEBORO, MASS.—The Home Automatic Telephone Company has been granted a franchise to operate in this city. A line is to be built from Brockton to New Bedford through Middleboro.

SAGINAW, MICH.—After determined opposition by the Bell Company, the Valley Telephone Company has been granted a new franchise by the city council. The Valley company has increased its capital stock and purposes to install a complete plant.

CLINTON, MO.—The Home Telephone Company, represented by J. H. Kyle, has applied for a franchise at Clinton. The men behind the new concern are both foreign and local capitalists.

WEST PLAINS, MO.—A telephone franchise has been granted to H. F. Gundy at West Plains.

NORWOOD STA., CINCINNATI, O.—The Cincinnati Independent Telephone Company has renewed its application for a franchise.

CHARLEROI, PA.—Application for a franchise to operate in Charleroi has been made by the Union Telephone Company. The company will also give service to Pittsburg, and later will apply for a franchise at Donora.

LOCKHART, TEXAS.—A franchise has been granted by the commissioner's court to N. P. Ridout to construct and maintain a telephone line from Lockhart to Cibolo and to other points.

FINANCIAL.

SANTA BARBARA, CAL.—The stockholders of the Home Telephone & Telegraph Co. are considering the advisability of increasing the capital stock from $200,000 to $300,000.

CHOTEAU, MONTANA.—It is the intention of the Montana Telephone Company to increase its capital stock from $2,400 to $2,500.

BEATRICE, NEB.—The capital stock of the Filley Independent Telephone Company has been increased from $3,000 to $9,000 in order to improve the company's plant.

CEDAR GROVE, WIS.—The Cedar Grove Telephone Company has increased its capital stock from $3,000 to $5,000.

JACKSON, WIS.—The Jackson Telephone Company has increased its capital stock from $2,000 to $4,000.

COMBINATIONS.

COLVILLE, WASH.—Plans are under way to consolidate all the Independent telephone lines in Stevens County and establish exchanges at Chewelah, Colville, Marcus and Northport.

CALEDONIA, ONT., CAN.—The local Independent telephone companies operating in Caledonia, Hagersville, Dunnville and other places have been consolidated under the name of the Dunnville Consolidated Telephone Company, Ltd. The new company has obtained a charter empowering it to build and maintain lines in the county of Haldimand and in the townships in Welland, Lincoln, Went and Brant counties.

NEWS—WANTED

THE matter contained upon the message and Operating Field pages of this paper is contributed largely by our special correspondents. We believe, however, that there are many valuable items of telephonic interest which are never brought to the attention of the public. There is no reason why this condition should exist, and the Editor, therefore, invites all telephone companies and the officials of such companies, to furnish any information that they can consistently make public relative to financial statistics, new construction, elections, franchises and personal items.

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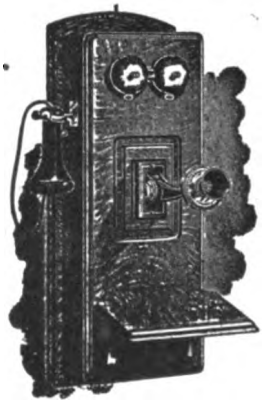

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THE WEEK'S MESSAGES

ELECTIONS.

IDA GROVE, IA.—At the annual meeting of the Ida County Farmers' Mutual Telephone Company the following officers were elected: President, R. E. Todd; vice-president, J. I. Hess; secretary, W. C. Forney; treasurer, A. A. Rauch; assistant secretary, W. S. Young.

LEWISTON, ME.—The following officers and directors have been elected by the Lewiston-Auburn Telephone Company: Thos. R. Brooks, president; F. E. Ebersole, vice-president and general manager; Edwin W. Gearhart, treasurer; L. B. Hillard, W. H. Newell, Thos. R. Brooks, E. W. Gearhart and F. E. Ebersole, directors.

PORTLAND, ME.—At a recent meeting at Portland, Me., the stockholders of the Northeastern Telephone Company and the Cumberland Telephone Company elected the following officers for the ensuing year: Thos. R. Brooks, president; F. E. Ebersole, vice-president and manager; Edwin W. Gearhart, treasurer.

RICHMOND, MASS.—The Richmond Co-operative Telephone Company has named F. A. Clement president and general manager, S. M. Loveland vice-president and J. R. Ayer treasurer.

FREMONT, O.—The following officers have been elected by the Fremont Home Telephone Company: R. J. Christy, president; J. G. Hunt, vice-president; J. M. Sherman, treasurer; Geo. Seamans, secretary and general manager.

OLD FORT, O.—The Mutual Telephone Company has elected R. G. Shannon, president; C. J. Fry, vice-president; C. C. Drown, treasurer; C. I. Anders, secretary.

ALPENA, S. D.—The new officers of the Cain Creek Telephone Company are: President, Frank Lyons; vice president, Wm. Bransted; secretary, W. Ross; treasurer, C. Vandagrift.

BUTLER, S. D.—The stockholders of the Butler Telephone Company at their annual meeting elected the following officers: President, L. C. Goodell; vice president, J. H. Mulberry; secretary and treasurer, N. E. Bjerke.

HERMOSA, S D.—The following officers have been elected by the Hermosa Telephone Company: President, O. A. Glidden; vice president, John Hanson; secretary, S. M. Booth; treasurer, E. Stenger.

PERSONAL.

HARRY KELLY has been appointed manager of the Inter-State Telephone Company's exchange at Dundee, Ill.

ROY McCOY has been appointed manager of the Citizens Telephone Company, at Fairmount, Ind.

E. H. McFALL has been promoted to the position of manager of the exchange of the Missouri and Kansas Telephone Company, at Hutchinson, Kas.

W. C. PENFIELD has been appointed manager of the exchange of the Missouri & Kansas Telephone Company at Chanute, Kan.

T. F. SARGENT, formerly manager of the Inter-State Telephone Company, at Sterling, Ill., has resigned to take charge of the plant of the Shreveport Telephone Company, Shreveport, La.

W. H. SHORT has been appointed manager of the Southern New York Telephone Company's system in the district which includes Marlborough, Highland, Milton and New Paltz, N. Y.

HOMER SMITH has resigned his position as superintendent of the Citizens' Telephone Company at Crestline, Ohio, to take charge of the Citizens' Telephone Company of Clermont county at Batavia.

W. H. SULLIVAN has been promoted by the Michigan State Telephone Company to the position of district manager, with headquarters at Holly, Mich.

R. L. THORNTON has been appointed manager of the exchange of the East Tennessee Telephone Company at Bristol, Tenn.

W. BRANCH WAINWRIGHT, who for several years has been manager of a district of the Diamond State Telephone Company, with headquarters at Salisbury, Md., has been appointed general traffic manager, with headquarters at Dover, Del.

D. C. YOUNG has been appointed manager of the exchange of the Darien Telephone Company, at Darien, N. Y.

New Construction in the Field

ADGER, ALA.—A line from Adger to Virginia City is being constructed by the North Johns Telephone Company.

TUCSON, ARIZ.—Lines are being constructed by the Consolidated Telephone, Telegraph and Electric Company connecting Tucson with Benson, Bisbee, Douglas, Naco, Tombstone and Cananea. The company is also building long-distance lines from Benson to Cochise and Wilcox.

EMINGTON, ILL.—A new switchboard has been installed by the Emington Telephone Company.

FREEPORT, ILL.—It is the intention of the Northwestern Telephone and Telegraph Company, recently incorporated, to expend about $90,000 in the construction of its system. Among the cities to which lines will be built are Rock Island, Moline, Davenport, Dubuque, Galena, Warren, Rockford, Mt. Carroll, Oregon, Dixon, Sterling and Clinton.

UPPER ALTON, ILL.—It is the intention of the Star Telephone & Telegraph Company to expend a considerable sum of money in extending its lines, and in making its system thoroughly up-to-date.

FORT WAYNE, IND.—Extensive improvements in the way of the installation of new switchboards and the extension of lines to connect with other exchanges are under consideration by the Farmers' Mutual Telephone Co.

LA PORTE, IND.—A new exchange building is to be erected by the La Porte Telephone Company to take care of its increasing business.

McCUTCHANVILLE, IND.—Considerable new construction work is being planned by the Southern Indiana Telephone Company.

ROANOKE, IND.—A new switchboard is to be installed by the Roanoke Telephone Company and many other improvements in its system are contemplated.

ALBIA, IA.—The Acme Telephone Company expects to greatly increase the capacity of its plants by the erection of a new exchange building.

NORA SPRINGS, IA.—The Portage Heights Telephone Company expects to build new lines.

STOCKTON, IA.—The Stockton & Walcott Telephone Company is completing the construction of its system between Stockton and Walcott.

KANSAS CITY, KAS.—The Home Telephone Company has under consideration the erection of a line from Kansas City to Muskogee, I. T. This will take in all the towns along the Santa Fe to Tulsa, and from there it will be built along the Midland Valley right of way. Operations are to begin at once.

VERNON, KAS.—The Barry County Mutual Telephone Company contemplates the construction of new lines to Cassville, Purdy, Verona, Scholten, Cato and other points.

BROCKTON, MASS.—The Home Automatic Telephone Company, which has been granted a franchise at this place, will shortly commence the installation of its system.

SEBEKA, MINN.—Many new lines are to be built by the Sebeka Telephone Company.

LIBERTY, MO.—It is the intention of the Clay County Telephone Company to establish an exchange at Liberty, and to connect with Holt, Kearney, Smithville, Excelsior Springs and other towns in the county.

BEATRICE, NEB.—It is the intention of the German Telephone Company to make many improvements in its plant, among which will be the installation of a new switchboard.

ROCKFORD, NEB.—The lines of the New Home Telephone Company are to be extended in Rockford.

WYMORE, NEB.—A strictly up-to-date plant is being established by the Home Telephone Company, of Beatrice, at Wymore.

MILAN, N. Y.—The lines of the Columbia Telephone Company are to be extended in Milan and a new line to Rhinebeck is being considered.

ROXBURY, N. Y.—The Rose Telephone Company, which has just completed a line from Halcottsville to Roxbury, expects to extend its system to Hobart and other points.

WILLOW POINT, N. Y.—The York State Telephone Company has extended its lines to Willow Point.

BERGHOLZ, O.—The Bergholz Telephone Company, which operates lines between Bergholz and Malvern, contemplates the erection of a new line to Canton.

DORSET, O.—The Dorset Telephone Company, which has recently increased its capital stock from $3,000 to $10,000, expects to spend the money in building new trunk lines.

NEW LEXINGTON, O.—The Citizens' Telephone Company, whose stock has recently been materially increased, contemplates the installation of a central energy system and also intends to build lines throughout Perry County.

SHANE, O.—New lines are being built by the Bacon Ridge Telephone Company from Shane to Circlegreen.

WARREN, O.—Among the new lines being constructed by the Warren & Niles Telephone Company is one to Newton Falls.

JOHNSTOWN, PA.—New wires are to be strung by the Johnstown Telephone Company to Altoona, Harrisburg, Lancaster and Philadelphia.

RAINY RIVER, ONT., CAN.—The Rainy River International Telephone Co. expects to extend its lines from Rainy River to Fort Francis, a distance of about 55 miles.

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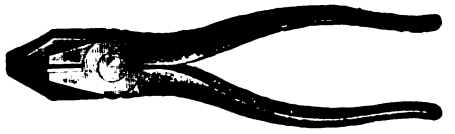
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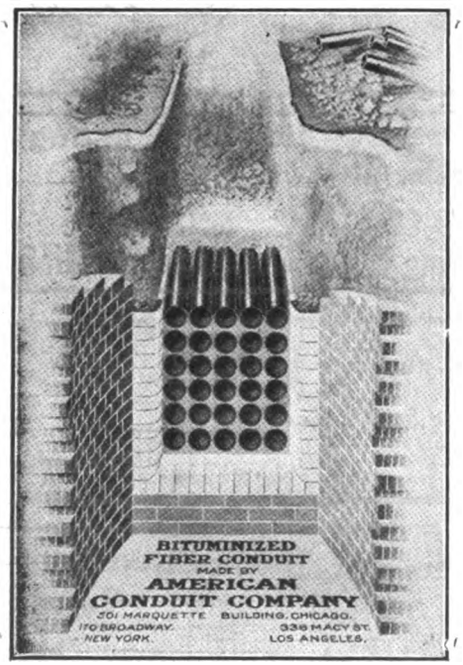

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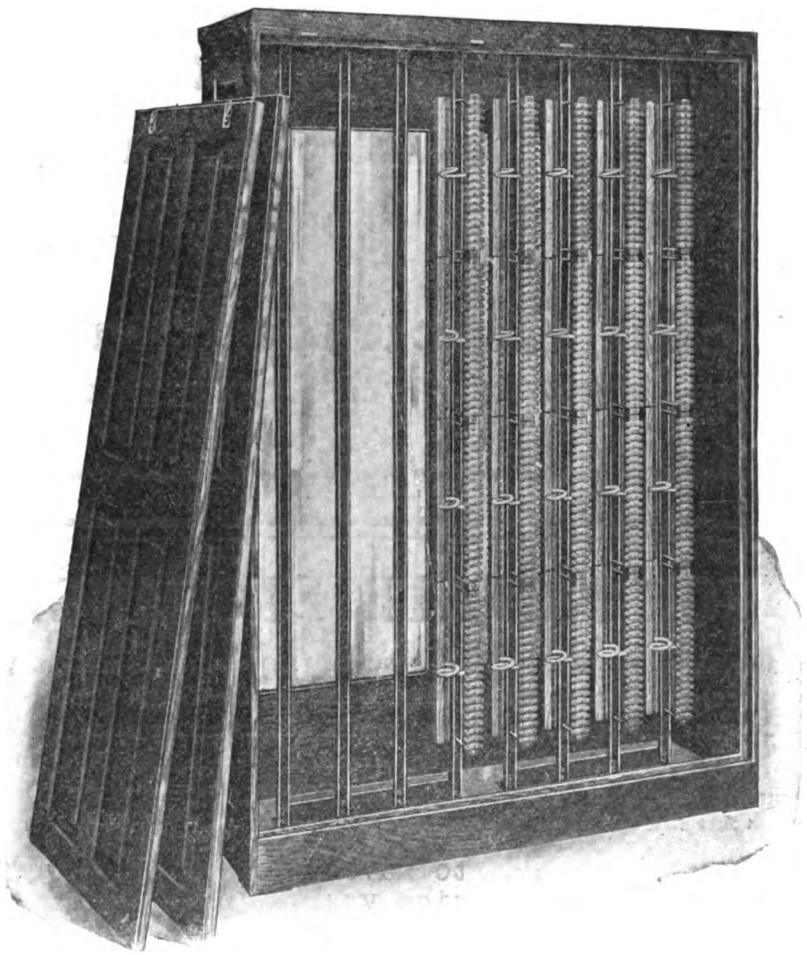

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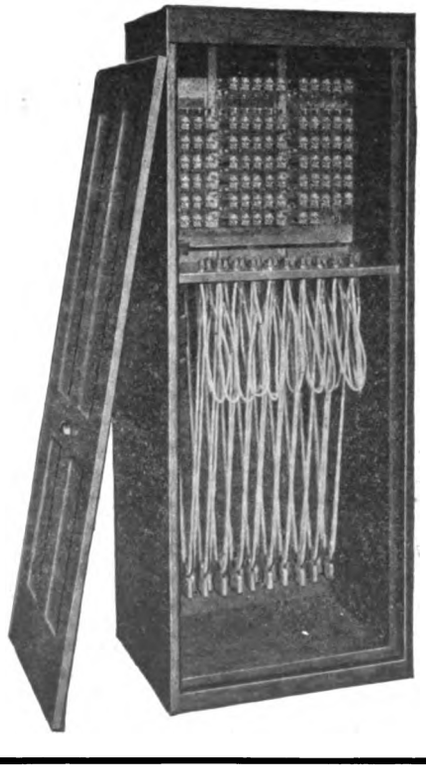

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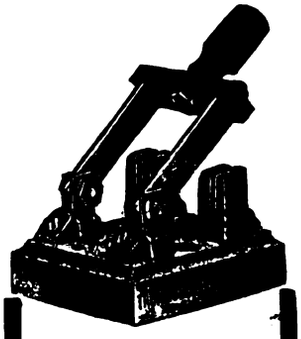
TRUMBULL TELEPHONE SWITCHES



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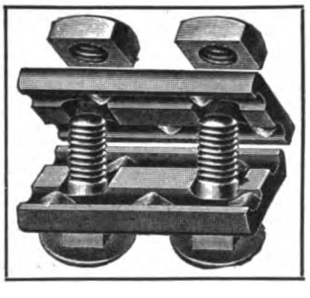

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¶ Having purchased the stock and equipment of the Williams-Abbott Electric Company, Cleveland, we will continue to manufacture their line, as well as increasing and broadening the already complete line of high grade apparatus upon which we have built a prosperous business and a large satisfied clientele.

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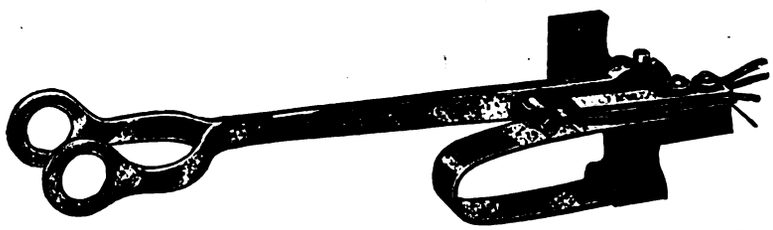
TELEPHONE APPARATUS

KELLOGG COMPACT DRY CELL TYPE TELEPHONES

CONTAIN THE KELLOGG HOOKSWITCH



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No Errors,
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It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE

United States Coin Register Co.

TOLEDO, OHIO

ROBINSON DISTRIBUTION RACK

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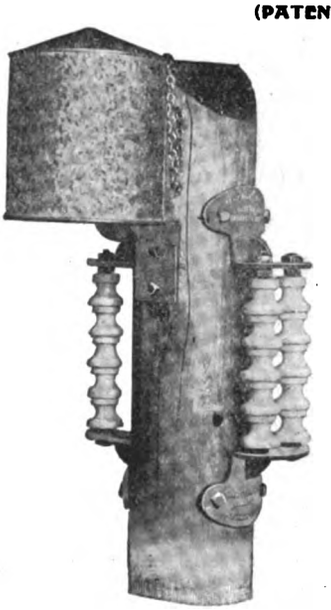

This cut shows the ROBINSON RACK as used in connection with Can Top. Its extreme flexibility makes the Robinson Rack a most desirable method for distribution. No waste of insulation. Costs 50 per cent less than circle top. Easy to trace circuits. Can distribute five pairs from one side of pole; ten pairs from opposite side. Notice special drip feature.

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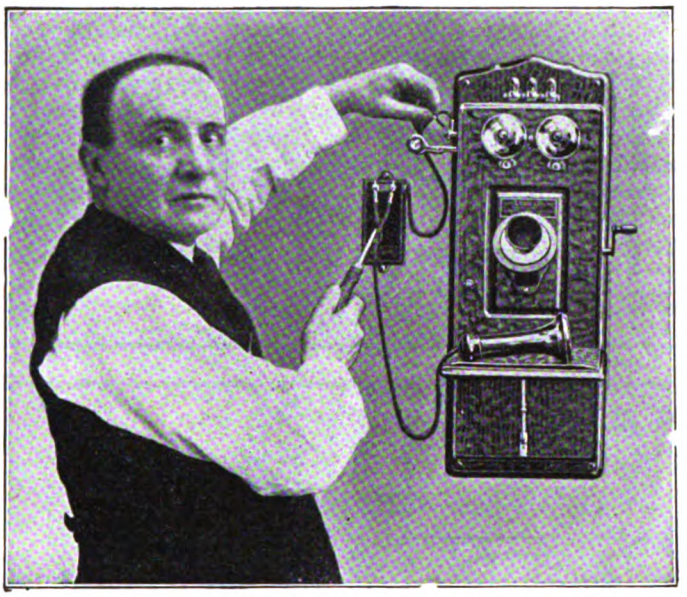

Talks With the Trouble Man

For twenty-five years I have been in the working end of the telephone business. I have chased all kinds of troubles in all kinds of places. I have seen the development of the party line system with all of its new troubles and advantages to the telephone man. Many a time I have been sent out into the country to learn why a subscriber's bell did not ring and struggled in vain to locate the trouble, only to find that others on the line either had their receivers off the hook or took them down before the signal was finished. I have heard the operator grumble and the exchange manager swear, but never found any means of stopping the trouble made by "RUBBER-NECKS" until the development of the party line condenser.

These furnished the greatest comfort we had ever known and to-day there is no necessity for an exchange manager to worry about **receivers off the hook.** The day is not far distant when a party line telephone without a condenser will be as rare as the old "Blake Transmitter."

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MILWAUKEE

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No. 10

(See "Reasons Why" No. 11 next week)

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It Makes No Clerical Errors **Booklet Sent on Request**

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Order a trial tube; by mail, postpaid, 20c.

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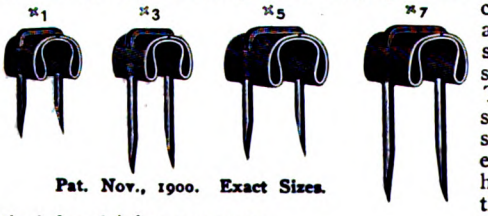

Pat. Nov., 1900. Exact Sizes.

Made in several sizes. Samples free.

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The American Telephone Journal

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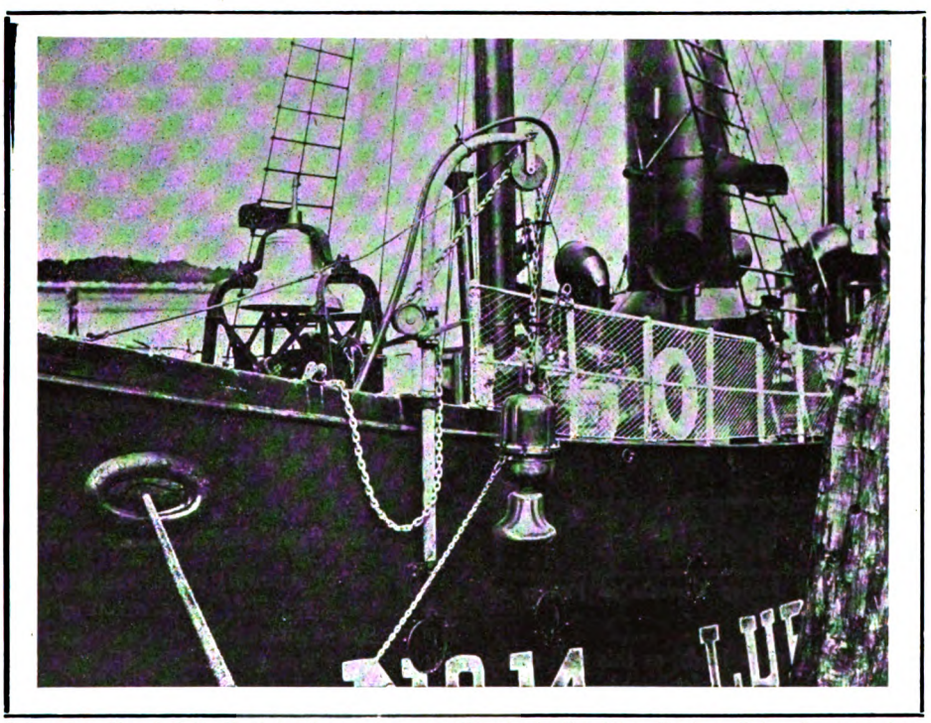
Advances in Ship Protection by Aid of Telephonic Devices

By F. C. Perkins.

THE unique system of submarine signalling employing a sunken bell and special types of telephone equipment which has been devised for use between ships at sea and between ships and shore, has come into very extended use since the appearance in The American Telephone Journal of the first article describing it. It will be recalled by those who became familiar with the system some time ago that a pneumatic bell transmitter, submerged in the water, is utilized, and a receiver box is placed in the pilot house of a vessel. The dangerous coasts may be avoided in a fog and it is now believed that the submarine telephone is destined to play as great a part in short range communication at sea as wireless telegraphy does for greater distances. Its greatest use is now, and will probably continue to be, to keep mariners off dangerous ledges when lights are invisible. In Boston Harbor and on Nantucket Shoals, Mass., and at Sandy Hook, as well as at Fire Island, N. Y., submarine signal bells are now used. The apparatus consists of a submerged bell of special design shown in the illustration, adapted to produce sounds in the water, and thus forming the signalling apparatus, while the receiving apparatus is located on the ship and picks up the sound of the bell and aids the pilot to determine its direction.



Submarine Signal Bell, Used in Connection with Telephonic Receiving Devices, Being Lowered from Side of Vessel.

Except where the new system of submarine signalling has been introduced the sending of sound signals through the air is the only way of safe guarding navigation in foggy weather. The limited range and extreme variability of transmission of sound through the air are due to differences in the density and temperature of the medium, to the interference of the wind, the smothering effect of snow, the drowning of signals by other noises, and the confusing effects of echoes, and other causes well known to mariners. These, together with the difficulty of locating sounds, even when they may be heard, stamp the ordinary air fog signal as a delusion and a snare. How often it proves so is attested by the appalling loss of life and property every year by shipwrecks, the majority of which are due to the navigators losing the course in a fog.

The superior reliability of submarine signals appeals to all, as the water is not only a better conductor of sound than air, but is also not subject to the same variable conditions. Sea water is of practically uniform density at all depths. The velocity of sound in water is more than four-fold its velocity in air, the distance traversed being about 1,100 feet per second in air and 4,700 feet in water. The range of signals in the water is correspondingly greater. Below the surface of the sea there is practically no noise to conflict with the note of the signal bell and abundant experience has proved that it can be heard and located as well during the most violent weather as on a calm day.

The submarine bell takes various forms, according to the different requirements of the service. In one of its applications it is hung in the air from a lightship and operated from the boat. Submarine bells of this class are used on the Red Island lightship in the St. Lawrence river, and also on the Elbe lightships at Hamburg, Germany, also on the North German Lloyd tender at Cherbourg, France, and on the Sandette lightship in the English channel. Another method of using it is to suspend the bell from a buoy, where it is rung automatically or through a connection by an electric cable to a lighthouse or other type of station on shore. For sending signals from a ship in motion, the bell or other sound-producing device is inside the hull of the vessel and is operated either by automatic machinery or by hand.

On the ships of the Cunard line as well as the French and White Star line, also on French, English, German and American government boats, the submarine signal receiving apparatus is installed. This apparatus comprises a pair of sensitive telephone

(*Continued on page 189.*)

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Comparative Costs of Methods of Supplying Power for Private Branch Exchange Switchboards

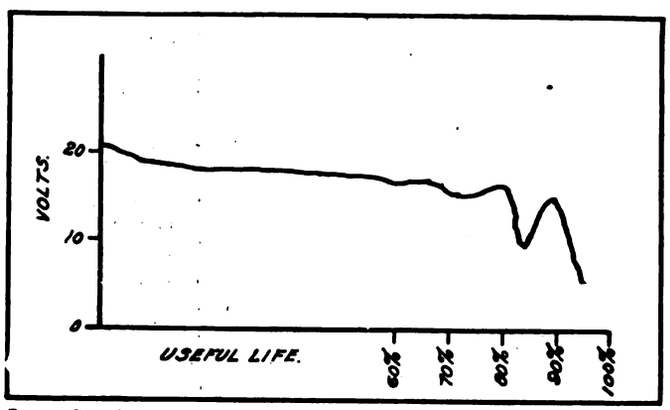
BY GEORGE A. SCOVILLE, SALES ENGINEER, THE DEAN ELECTRIC CO.

ALL large operating companies do extensive branch exchange work, and each company has, in most cases, worked out some system to supply power to such boards in a manner well suited to whatever conditions exist. On the other hand, when smaller companies launch into this class of work they are more or less at sea how to proceed in selecting the proper method of supplying power to their boards. The writer has frequently seen large branch boards and also isolated telephone exchanges operating from 50 to 200 lines (common battery) from ordinary types of dry cells. It is needless to add that in every instance the managers were dissatisfied with the cost and behavior of their power sources.

The following discussion will comparatively line up the conditions more generally found, and, by giving figures which the writer has derived from actual installations, may assist those who are going into this class of work to figure out their needs more exactly. All data will be based on the type of board with which the writer has most frequently to deal—a 20-volt, lamp signal, common battery branch exchange board with an assumed equipment of thirty lines, six cords, two trunks; load to be ten calls per line per day.

In choosing primary power for a branch exchange board, the different methods of supplying power and their adaptation to the available source of power must first be considered. The cost of each possible method should then be tabulated so as to show the cost at the end of the first year, the second year, etc.

On the board under discussion we will assume that direct and alternating current is available and that power can also be



Curve Showing Variation and Gradual Falling Decrease in Voltage of Primary Battery.

supplied from the main office over trunk leads, as this will make it possible to use any one of the following plans which are more generally applied:

(*a*) Some form of primary battery.

(*b*) Storage battery located at the branch exchange and charged from the direct current mains through resistance.

(*c*) Current supplied over trunks from the main telephone exchange battery.

(*d*) An isolated power plant.

Installing some type of primary cell will immediately suggest itself as the simplest method, but, on the other hand, it will prove to be the most unreliable. Careful life tests on all forms of primary batteries will show them to be not at all fitted for this class of work. It is necessary on common battery work to have a steady source of power and on primary cells the voltage will start out bravely, but will very soon fall to a certain value, remaining near this value the greater part of its life; then, as it approaches the end of its life, it will fluctuate so as to be unfit for further work. During the early part of the life of a primary cell no attendance is required, which is an important item, but when nearing the end of its life it is necessary to watch it closely and finally either renew parts or replace the cell entirely. The better grades of primary batteries of, say, 300 ampere hour capacity, with a sufficient number of cells to give 20 volts, will cost about $60. This price will include drayage and installation. Such a set should last about four months. It will be necessary to replace or renew about every four months. Whether renewed or replaced the cost will very nearly repeat itself, or will be at the end of the first year:

Initial cost	$60.00
Renewals	100.00
Labor renewals	7.00
Drayage	3.00
Maintenance	10.00
	$180.00

At the end of the second year there will be an additional expense as follows:

Three renewals	$150.00
Labor renewals	10.50
Drayage	4.50
Maintenance	10.00
	$175.00
Add to this the cost for the first year	180.00
And we have	$355.00

Or an increase of $175.00 each year.

The curve opposite is taken from a typical set of primary cells under actual load and indicates the behavior of the voltage at different stages of the life of the cell.

It will be interesting to note at this point some data taken by one of the large operating companies on a branch board equipped for 90 lines and 6 trunks—the load being less than ten calls per line per day.

Initial cost of primary batteries	$81.00
Three complete renewals	189.00
Labor renewals	30.00
Drayage	8.00
Cost of first year	$308.00

The cost of renewals alone was $227.00 and the primary battery was replaced after a year's run by a five ampere, thirty volt Holtzer-Cabot alternating current motor generator charging set, a five ampere storage battery and a home-made power board with switches, etc. This cost, installed, $220.00. The power bill was $4.15 per month, or $49.80 per year—paying for power at the rate of 7½ cents per kilo-watt hour. The maintenance was about the same as for primary cells and attendance but little more than for the primary cells. It is necessary to add that during the second year the equipment had increased to 118 lines and 14 trunks, and the load considerably over ten calls per line per day.

The plan of installing a charging panel and storage cells is very popular and can be easily adopted if direct current is available at a reasonable voltage. Frequently a building has its own lighting plant, thus assuring, in most cases, steady voltage. A simple charging panel to contain the necessary lamp resistances, sockets, switches and underload circuit breaker will cost in the neighborhood of $38. In choosing a battery it is best to take one that will run for long intervals, the additional cost on small batteries being too small to take into serious consideration. 11 small storage cells with a normal charging rate of 1½ amperes, with necessary wire, installed, will cost about $30. It will be necessary to charge such a battery about five hours twice a

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week. The cost of a single charge, assuming a rate of eight cents per kilowatt hour, would be:

$$\frac{1\frac{1}{2} \times 110}{1000} \times .08 = 1.32 \text{ cents per hour.}$$

10×1.32 (cts.) $\times 52 = \$6.86$ per year for power.

Total cost will be:

Charging panel	$38.00
Battery	30.00
Operating	6.86
Maintenance	10.00
	$84.86

During each succeeding year the cost will vary from $16 to $25, the fluctuation depending on the amount of repairs and attendance. There is a waste in the charging panel, so that it gives an efficiency of only about 20 per cent. at 110 volts. The increase of the voltage will further diminish the efficiency.

The attendance cost per year will vary with the number of boards in operation in any district and often this item is reduced when the engineer of the building does the charging, only an inspection now and then being necessary. Again, the building will frequently furnish the charging current free. In small exchanges operating but a few of such boards the extra time is added to some workman's routine.

The third method, supplying battery over trunks from the main office, is accomplished in various ways, such as:

(1) To feed battery over one, two or three cable pairs to the board in question, with condensers bridged across the leads at the board to take care of noise, etc.

(2) To feed battery from the main office over cable pairs and use a small storage battery at the board.

(3) To feed battery from the main office through a storage set at the branch board and use the ground for return. These methods will be discussed in detail, with reference to the number.

In feeding battery from the main office for charging storage batteries at the branch board either the exchange battery or direct current at a higher voltage may be used, and in any event the condition best suited must be used. Wherever a cable pair is used that pair or pairs strung on a pole has a definite value, has a definite rental value and will also represent a certain loss in charging which is due to the resistance of the cable pair; also, wherever power is supplied from the main exchange battery the loss in the original machines and storage battery must be taken into consideration.

(1) To feed battery direct over cable pairs without a storage set at the branch board is only advisable where the branch board is located close to the main office and the equipment consists of but few lines, because as the load increases the drop in voltage due to the cable resistance will make the board inoperative, or will require more cable pairs, which is objectionable. This method is frequently used where the cable pairs are one side and the ground return on the other. This method frequently requires condensers bridged across the leads at the board to prevent disturbances.

(2) Again where the distance from the main office is not great, cable pairs are used to feed power from the main office battery to the branch board and charge the branch battery using the ground for return; that is, the branch battery is a floating battery and is connected in multiple with the main battery continually. This can be used where the feed leads contain but little resistance. This method is a favorite one with some companies.

(3) This method is very generally used, especially where the larger operating companies operate quite a number of branch exchanges, and is most generally accomplished by using 60 to 110 volts direct current and charging the branch exchange batteries from the main office at night. One of the large operating companies which operates about 230 branch exchange boards uses this method and charges each branch exchange battery all night for five nights during the week (in nearly all cases on boards of the size under discussion). C. T. cells are used and these are charged at the rate of one-half ampere. The loss in cables, the value of cable pairs themselves, etc., is more than balanced by the saving of labor that would be required to charge the isolated plants. In this case the company saves the labor of five men, who were paid $2.75 per day.

(*d*) Where the branch board is isolated and alternating current is available an isolated power plant may be installed as follows:

11 C. T. storage cells	$30.00
Simple power board with voltmeter, ammeter, circuit breaker and switches, etc	135.00
Motor generator charging set	75.00
Labor installing	25.00
	$265.00

The cost of power will about equal that shown for the charging panel; the maintenance and attendance will exceed somewhat that of the charging panel. The attendance cost must be approximated to suit the actual conditions in this case as well as the others.

The question of ringing power has not been mentioned as it will be taken care of in about the same way regardless of the way power is supplied. The favorite way is to furnish it over a cable wire and use ground for return. The alternative plan is to use a hand generator, or some form of pole changer.

In summing up the different conditions we will see that the primary battery should only be used for emergency or as a last resort. Again the alternating current motor generator set, owing to first cost and attention necessary, should be eliminated and the choice should be made from the remaining methods. When only a few boards are operated and direct current is available so that satisfactory arrangement can be made with the management of the building, the charging panel will be the most satisfactory. As the number of boards increases, so as to bring into consideration the cost of labor to take care of charging them some of the methods of furnishing battery over trunks must be used. By tabulating the costs of the different methods and considering the features of each it will be a simple matter to decide which is the method to adopt.

OFFICIAL BULLETIN NUMBER NINE OF THE INTERNATIONAL TELEPHONE ASSOCIATION OF AMERICA.

CONVENTION.—The convention will be held at the Auditorium Hotel in Chicago June 4, 5 and 6. The committees will meet on June 3. Full details will be given out later.

PROGRAM.—The convention program is being prepared. Officers of affiliated associations are requested to send in names of speakers and candidates for the various committees, so that every section of the country may be properly represented on the program.

Suggestions regarding topics to be discussed are also invited from all interested. If you think any subject should be given attention, we want to hear from you at once.

INTERNATIONAL CONVENTION DELEGATES.—Associations should select their delegates and alternates as early as possible, making prompt report to the office of the association so that proper credentials may be issued. Don't put this off until the last moment.

REPORTS FOR THE CONVENTION.—Officers of the various associations are reminded that under the present constitution the order of business provides for *written reports* from associations, in response to the roll call. Active work to bring the statistical information for such reports up to date should begin immediately. *This matter is of vital importance. Don't neglect it.*

SPECIAL NOTICE TO STATE ASSOCIATIONS.—The attention of officers of State associations is directed to the stand taken by the International Association at the last convention, regarding Bell-owned equipment manufacturing companies, and to the importance of *not permitting such companies* to exhibit at conventions.

STATISTICAL WORK.—The map department has made exception-

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ally good progress during the past few weeks, due to a more ready response on the part of local companies to requests for map data. We appreciate this, and trust it will continue, in order that a good exhibit of maps can be made at the convention. Remember, you are serving your own interests by making it possible to include your company's lines in our State maps; so if you operate toll lines, send us a sketch of them without delay. Don't make it necessary to write you four or five times for this.

We have had occasion recently, to request considerable information of a statistical nature, from various companies, and wish to extend our thanks for the alacrity with which our letters, with scarcely an exception, have been answered. It will be necessary to secure further data of this kind, and we hope for a continuance of this prompt attention to our requests. It saves time and lessens the expense of the work. In this connection, local companies would do well to refuse to furnish information regarding their plants to any persons not known to be thoroughly in sympathy with the Independent movement.

The Telephone Kicker

BY MISS T. BARNES.

To the misusers and abusers of the telephone this article is dedicated.

WHEN the telephone was in its infancy the instrument was regarded as a plaything for the family, for relatives, and for neighbors. It was thought of much as the phonograph is in the rural homes to-day, but for the last century the spirit of progression has so thoroughly saturated our minds that nothing remains very long a novelty to us. As each new invention becomes known it immediately becomes one of the necessities of life, or in a very short time passes down into history as a failure. But we are never satisfied. Very few people could replace the idea with a better one, but nevertheless it comes under the ban of criticism.

We are becoming the masters of electricity, this wonderful force, more and more every year, causing it to run our factories, street cars, carry our messages, and perform innumerable other kinds of useful work, yet when a stronger force, the elements, wages war and spreads devastation for a time, there is a fuming and fretting and often profanity hurled at anyone who looks as if he might be connected with the thing in trouble.

The telephone is regarded as a cuspidor for the wrath and profanity of the "kicker." He spits into the telephone things that he would not think of saying if he were in the presence of the party at the other end of the wire. He is a coward. The fact that he has walls and blocks of pavement between him and the other person tends to make him more vindictive. If he should be brought unexpectedly face to face with the person whom he abuses, and be given a chance to speak, he would tremblingly offer an apology and then take it out on the telephone girl for the next week because he knows she does not dare talk back; but he fires away at the transmitter while the office boy or dog slinks out into a quiet corridor until he has expended his wrath, as self-preservation is the first law of nature.

The telephone, like a magnet, seems to draw out all the littleness in human nature.

The man who demands that his telephone be repaired before anyone else's telephone is looked to is the one who keeps other people waiting longest for any reparation he should make for his acts. The man who demands the quickest service, in an unreasonable manner, is the one in whose place of business you usually make the longest waits, either through inefficiency of service or otherwise. But if you should stand there fuming and fretting, and become abusive to his help, you would be shown the door. If this happened during a rush spell the customers would say "How unreasonable he is. He can see how busy they are."

The man who asks to borrow your residence telephone at night a few minutes to talk over a little private business is the one who asks your family to step out into the hall or anywhere else out of hearing, no matter how it inconveniences them, as his conversation is of a private nature. He then proceeds to abuse everyone from the operator to the manager because the name of the party he is calling for is not in the directory, as it was installed after the directories were published. When he finally hangs up and departs you feel as if a small-sized cyclone had broken loose and you look around to see if your family is all right, then lift the receiver off the hook and apologize to the operator.

The man who demands angrily that his residence line be released, "as his family has held it too long already," is the one who in his home is a jealous and selfish monster.

The man who claims he never gets good service is the one who is disappointed when he does.

The man who doubts that a line is busy when he calls for it does not think it can be busy unless he is using it; when the connection is completed for him, he demands to know if it *was* busy previous to his call. He takes up the owner's time with a long preamble about how many times he called, etc., and how he will give his orders to other houses. He then turns in a small order and grumblingly hangs up the receiver. In the meantime the firm has probably lost one or two better orders by his holding the line so long.

The man who has time and inclination to "jolly" the operator is the one who in his home has neither time nor "jolly" for his family.

For the unreasonable woman, the writer will say that she would rather take fifty reports of trouble from angry men than one report from an unreasonable woman. After she has hung up the receiver little phrases of her conversation keep humming through the operator's brain like dozens of tormenting little mosquitoes with their shrill tones, singing threats of their painful bites into her ears. The woman who holds the line the longest is the one who wants independent line service with party line rates.

The woman who does not believe that her telephone is repaired, because the trouble man did not come to the house, is the one who has a long lecture ready and hates to think that she has no one to listen to it.

The woman who claims that she never gets good service is the one who is never at home when the collector calls.

The woman who complains to the manager when a second party is put in on her line while she is talking never has a word to say if she is put in on a neighbor's busy line, at least not until they are through talking.

Is it not possible that there would be fewer mismated people in the world, if we all could see each other from the telephone operator's point of view?

ADVANCES IN SHIP PROTECTION BY THE AID OF TELEPHONIC DEVICES.

(*Continued from page* 185.)

transmitters placed inside the ship against the outer plating or planking and below the water-line, one transmitter being placed on the port side and the other on the starboard side of the vessel. Wires connect these transmitters to a single telephone receiver box in the pilot house, a switch at this point enabling the pilot to listen to the sound as it is received either on the port or the starboard side, and by a simple manipulation the bearing of the signal bell can be accurately located.

The mechanism for hearing these signal bells in the pilot

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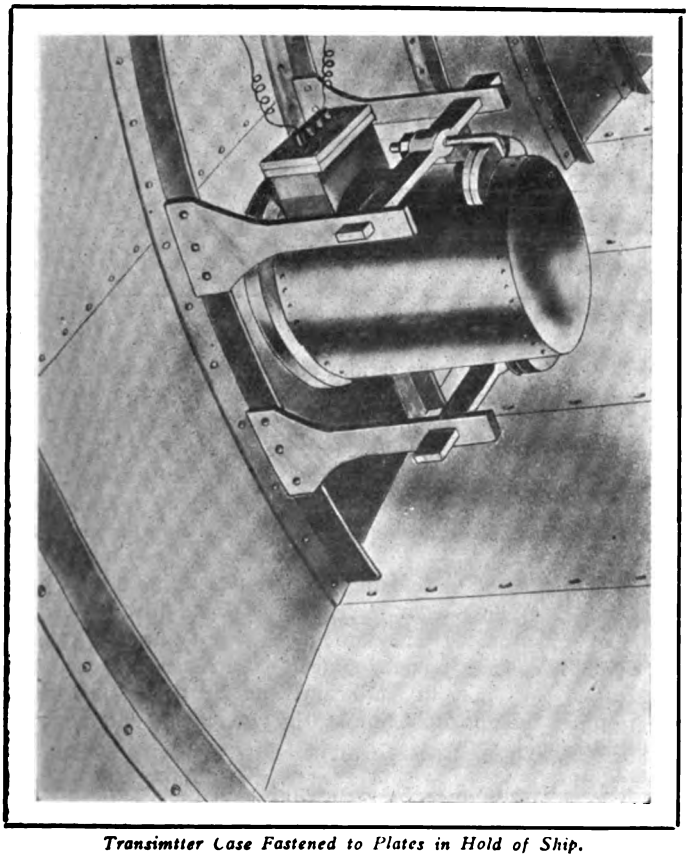
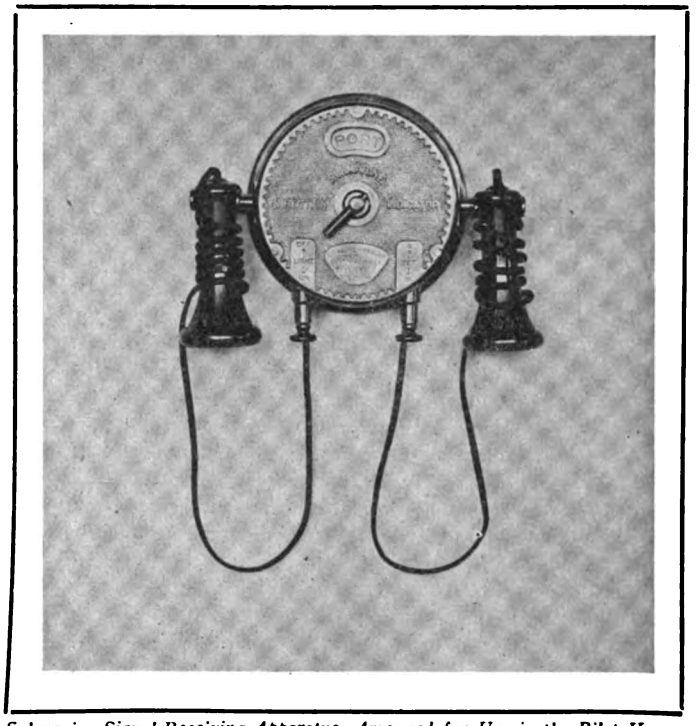
house of a ship looks like an ordinary telephone at first glance. However, instead of making use of but one receiver, two are utilized in case one should break down for any reason. By taking down the receiver when nearing a dangerous reef where a lightship is anchored, the captain of the ship can tell from which side the sound comes by merely moving the lever to one side and then to the other. Sound travels in water in only a straight line, and if it is reflected it is so weakened that it can be readily distinguished from the noise coming from an object in a straight line. A captain can guide a ship from the sound of a submarine bell when the ship is in a dangerous course, the captain hearing the bell louder through the transmitter when the lever is turned to the side toward the bell. He then changes the ship's course in that direction until the bell sounds alike which ever side the lever is turned to. Then, knowing the direction of the bell, he easily avoids the danger. The position of the bell can be determined in this way within half a point, and as the mariner's compass is divided into 32 points it can be seen how accurately the bell can be located. In a report made to the Secretary of the Navy, Lieutenant Commander Walling stated that he could hear the bell from 5 to 12 miles and locate it within ⅛ of a point.

Owing to the magnetism of the telephone receiver it is necessary to keep the telephone apparatus away from the compass, and in some cases a flexible speaking tube runs from the telephone to the front of the pilot house. Wires are led through pipes down to the tanks on either side of the ship which contain microphones surrounded by water. A sound coming from the water outside passes through the ship's side and into the water in this iron tank, no hole being made through the ship's hull. The sound waves strike the transmitter diaphragms and are transmitted as in the ordinary telephone.

The Navy Department at Washington proposes to use this method for communicating with submarine boats and the Submarine Signal Company, of Boston, has designed a special apparatus for sending messages, called a multiple sounder. One instrument has an alphabetical keyboard similar to a typewriter. Pressing a key causes a set of hammers to beat on a diaphragm, the Morse telegraphic signal being used for each letter. A special apparatus like a stock ticker enables the message to be picked up on a submarine boat or received at a short station or on the flagship of a fleet. A still simpler way of transmitting messages is by attaching a striking gong to the side of the ship and tapping out a certain code, the tapper being worked by hand, steam or electricity. A message of this kind can be picked up at distances up to twelve miles by parties knowing the code. The Navy Department has a secret code.



Transimtter Case Fastened to Plates in Hold of Ship.



Submarine Signal Receiving Apparatus, Arranged for Use in the Pilot House of a Vessel.

Newport was the scene of the first experiments with this apparatus, the yacht Chipeta being equipped with the apparatus and sending messages to the two submarines Porpoise and Shark, while under water. Although these two boats had no means of replying save the crude method of striking a hammer against the steel sides of the boat, their signals were readily picked up by the Chipeta.

Since it is feared that during action wireless telegraphy will be unreliable owing to the concussion of the big guns throwing the delicate coherers out of order, the United States naval authorities have looked to this new method with interest. Experiments were conducted on a government tug at Newport with a view to the introduction of this system as a regular part of the submarine boat service.

Submarine bells are now installed at the lighthouse at White Island Reef, Red Island, Anticosti, Lurcher Shoals, Boston, Pollock Rip Shoals, Vineyard Sound, Breton's Reef, Cornfield Point, Nantucket Shoals, Fire Island, Sandy Hook and Overfalls. These bells are struck in all thick weather. An order was given by the Secretary of the Navy for the installation of a number of these machines on warships and submarine boats. The Atlantic, which won the German Emperor's cup, was equipped with this apparatus and if all the other vessels had been equipped in the same manner there would have been no necessity for postponing the race, owing to the heavy fog.

Major H. L. Higginsson, who is greatly interested in submarine signalling, states that "It is outrageous for steamers like the Cunarder Caronia to run ashore. To jeopardize lives and imperil valuable cargoes is a crime when the present age on invention offers apparatus to safeguard them. If the Caronia had been equipped with a submarine telephone it would never have run ashore, for the night before the Caronia sailed the Deutschland, equipped with the submarine telephone, put out to sea under similar weather conditions without mishap, and the Sandy Hook signal could be heard 8 miles away. It is as necessary to safeguard the voyage of a sea craft as it is to insure

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property or lives on land. Where the means are offered to insure safety on the seas, no time should be lost in adopting inventions with that end in view." Many lives may be saved each year by this newest adjunct to the government coast service.

In addition to its use as a means of preventing shipwreck, its possibilities for use in naval affairs have caused not only the United States Navy to adopt it, but to some extent the navies of England, Germany and Holland. It affords the only possible means to communicate with submarine boats under water. Wireless telegraphy cannot do this. Moreover, atmospheric conditions often render wireless telegraphy unreliable and during fogs or thick weather the present wig-wag system of signal flags is worthless. By the submarine telephone, however, the admiral of a fleet can send messages to all the vessels in his squadron and know the location of every one by simply holding a telephonic receiver to his ear. The commander of a warship can hear the approach of a torpedo boat or battleship under the cover of the fog or darkness and, being able to tell the direction in which it is approaching as well as its approximate speed, prepare to receive it.

Rural Party Line Ringing Codes*

THE next thing considered was proposed by our Bell friends, who assured us that it was in use all over the country on "farmer lines" and was the best that could be devised, as it was hatched "in Boston." 'Twas the one shown in Table 5. This code is simple, easily understood, requires only a reasonable number of rings (but enough to rack their generators in a short time), most of which are uniform in length, but is wasteful of time, as a space is used in almost every call, and, as it is not within the range of possibilities to teach the subscribers to all use even an approximately correct "space" when calling one another, it was declined with thanks.

After the experience outlined we decided that a code for our work should have the following characteristics:

1. SIMPLICITY, so as to be easily comprehended.
2. BREVITY, as time used in signalling cuts down traffic, (also income).
3. SYSTEM, as there are already too many "hodge-podge" haphazard "codes."

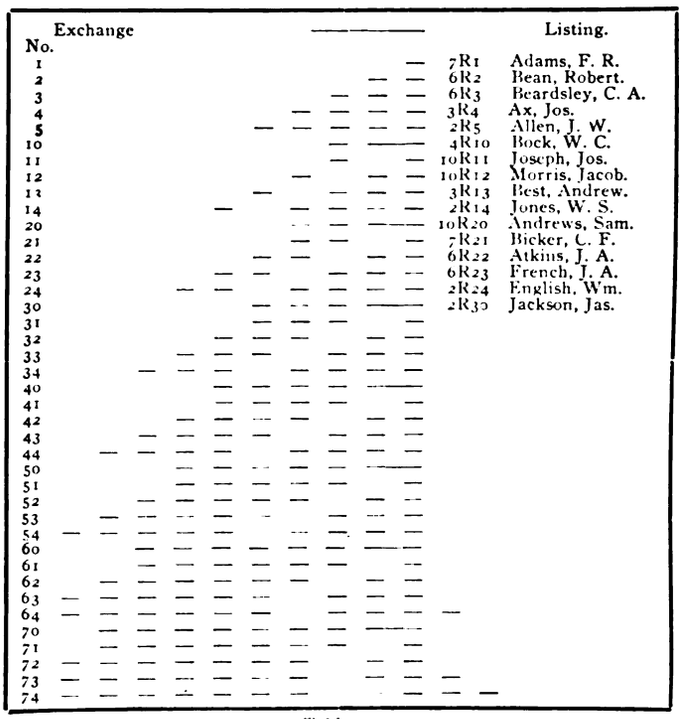


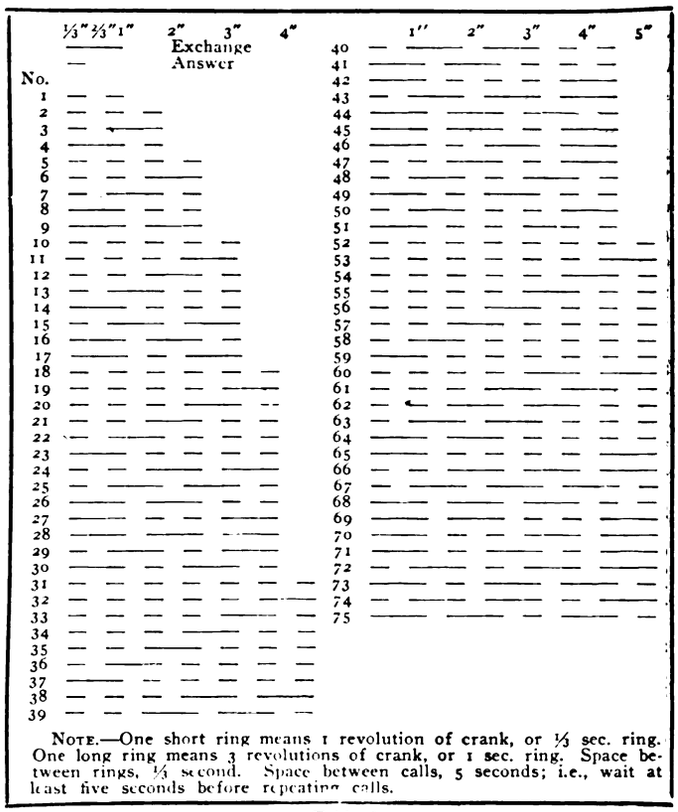
Table 5.

4. EXPANSIBILITY, we are growing.
5. DISTINCT SIGNALS, so that parties not called will not have to follow ring to completion before knowing that someone else is wanted.
6. ABSENCE OF "SPACED" CALLS.
7. ABSENCE OF LONG SERIES OF SIMILAR RINGS } To avoid
8. CALL UNITS OF NOT MORE THAN TWO LENGTHS. } confusion
9. SHORTEST CALLS FIRST ON LINE. To keep down ringing load.

*Continued from the issue of March 16.

The code devised and adopted as best meeting the conditions imposed we will call code F, and it is shown in Table 6.

We think that we have overcome the faults generally complained of in "codes," as the above meets specifications fairly well, as it complies exactly with specifications Nos. 2, 3, 4, 6, 8 and 9, and as nearly as may be with Nos. 1, 5 and 7. There may be some serious objections to this code; if so, we would like to hear what they may be.



NOTE.—One short ring means 1 revolution of crank, or ⅓ sec. ring. One long ring means 3 revolutions of crank, or 1 sec. ring. Space between rings, ⅓ second. Space between calls, 5 seconds; i.e., wait at least five seconds before repeating calls.

Table 6.

We believe that the lack of standards in ringing has caused more trouble and killed more codes than has anything else, and respectfully submit to the fraternity those mentioned in Code F with the hope that they will benefit others as much as they have us—we think they will be found practically correct.

It may be noted in closing that we have made all our codes rather extensive, as we carry a normal load of forty-two telephones on a twenty-mile line, two exchanges (equal to eight telephones) and sixteen telephones (sometimes twenty-two) on a seventy-mile line, and ten telephones on a twenty-mile "composite" line with two intermediate telegraph stations.

EDITOR'S NOTE.—The writer of the interesting contribution here concluded signs himself Se HuntLeigh Pschmythe, and hails from Pennsylvania. Ideas of other men will follow.

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QUERIES

PROTECTION FOR POWER WIRES.—(834.)

Will you please let me know if it is sufficient protection for our charging machines which are run from current supplied to the motor from the mains of the electric light company to put in a fuse at the point where the wires enter the building, the same as is done for the lighting circuit of the exchange? We do not want to spend any money for extra protective devices if it is not necessary, but on the other hand, do not want to run any risk of burning up our machines. Your advice will be very much appreciated.

C. P. F.

When the wires from the electric light company come to your exchange wholly underground, it ought to be sufficient protection to fuse them. Then, if there should occur any condition in the machine or the inside wiring which would cause a dangerous current to pass, with its consequent heating effect, the fuse would blow and thus protect the inside wiring and apparatus. As in most cases, however, the power wires are led to the telephone company's building on poles some provision should be made for protection against extra heavy currents and lightning, which are liable to be communicated to the wires at any time. It is usually the custom to insert some kind of a spark gap lighting arrester, with a magnetic blowout device, for complete protection of the circuit in order that the apparatus and wiring may be safely secured against damage from the several possible causes.

NUMBERING INSULATOR PINS WITH RELATION TO THE CENTRAL OFFICE.—(835.)

Please give me the correct way to number the wires on cross arms from the central office. Suppose, for example, that I have lines laid out with cross arms arranged as shown in the enclosed diagram, how would I number the pins?

E. B. R., Neb.

There are several common ways of numbering the wires in such a case as you describe, all of them perhaps equally good. The method which is probably most frequently employed is to number each group of wires, North and South, independently from 1 up. They will then come into the office as Nos. 1 and 2 South, Nos. 5 and 6 North, and so on. In connection with this arrangement a chart should be kept, showing the number and location of every pole and the pins taken by the various wires on each pole, for reference.

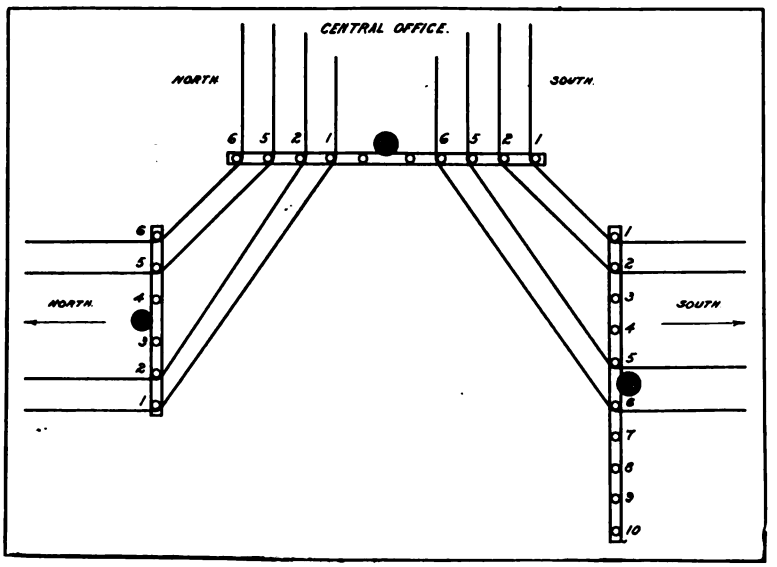

Fig 835.

TELEPHONE LINES ON TELEGRAPH POLES.—(836.)

Will you please advise me if it is practical to put telephone wires on telegraph poles and give good service? One of the leading telegraph companies has a trunk line consisting of two cross arms, six pins each on 35-foot poles running through our section, and it occurred that we may be able to arrange to put a ten pin cross arm about five feet below their cross arms and reach several more towns with toll lines. At the same time we would like to give the telegraph company the privilege of installing a telegraph station in each of these towns where it has no station and where the town is too small to keep an operator for the telegraph work. We would then be able to give the telegraph company a private circuit to the nearest operator, who could receive and deliver telegrams by telephone pay station installed in same store which is in our town. We expected to give them a grounded circuit, using both sides of our metallic circuit as one telegraph line. We do not have electric traction lines to bother with. What do you think of our scheme and can you suggest anything better?

M. W. B.

The use of a telegraph pole line for telephone circuits as you propose is entirely feasible. With a separation of five feet between cross-arms there should be no disturbance in the telephone circuits from the telegraph company's wires, provided the latter company uses only the standard Morse apparatus, duplex or multiplex.

If the telegraph company makes use of any duplex or quadruplex circuit which involves alternating or pulsating currents of high frequency, such proximity will be fatal to telephone service. You can not get too far away from them under these circumstances. It is very desirable to have an agreement before occupying its poles, that the telegraph company will not use such a circuit. The "Phantoplex" used by the Postal Company is an example of the sort to be avoided.

While we notice that in the sketch you have sent you use the type of phantom which is made up with retardation coils, we believe that a more satisfactory form of simplex circuit than the one with the retardation coil is the repeating coil circuit. It has the advantage of electrically isolating that part of the telephone circuit used for the phantom telegraph from other portions of the line, and from the switchboard apparatus. It is, moreover, absolutely a necessity if the telephone operators are to ring on the line with grounded generators.

A good repeating coil with four windings of a proper resistance, and with a continuous soft iron core, which may be made of wire or laminated, may be used. Care should be used not to introduce a number of these coils into a telephone circuit on which it is necessary to ring through for any great distance. The repeating is not very efficient in the transmission of ringing current of low frequency, though, in its best form, it offers little resistance to the passage of high frequency voice currents.

THE CONSTANT READER'S QUERY.—(837.)

March 20, 1907.

Editor AMERICAN TELEPHONE JOURNAL, New York.

Dear Sir—In your issue of March 16, in the Query Column, I notice description of circuit for "Picking Out Pairs in Cable Carrying Battery." Would you be kind enough to publish diagram of similar circuit and explanation of the Bell company's test box equipped with induction coil, condenser relay buzzer, three batteries and switch, which they use for similar work, and oblige,

Very truly yours, CONSTANT READER.

Now, if any man knows just what this chap wants, if he will enlighten the Editor he will be doing us a favor. The "Bell company"! There are hundreds of Bell companies, when we get down to testing out cable pairs, and perhaps there are twenty different sets. And then, this query looks as if the man knew all about the thing himself! Signs himself "Constant Reader," too. Doesn't want to know badly enough to give his name and address, so that we can write him a letter if the answer to his question can not be published. The worst of it is that this letter is not a rare bird—it's one of a class. This is the first response to a query signed only "Constant Reader" which we have published, and it's likely to be the final one.

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THE EDITOR'S PAGE

THE WIRE CHIEF AND HIS TERRITORY.

THE success of a wire chief is not always due to the perfection of his knowledge of the theory of the instruments he uses in the performance of his work. It is fully as likely to be a result of an intimate acquaintance with the things encountered by his assistants in the course of their work on the plant. The prime duty of the wire chief is not to take readings of measuring instruments, but rather to interpret such readings as are obtained, and which in comparison with the entire sum of his work rank as mere incidents. The skilful translation of the readings depends fully as much upon a close and real knowledge of the entire territory under his care as upon an acquaintance with the nature of the operations which may be performed at his desk.

It is true that the man who has a good record for accuracy is likely to be known as a wizard with the galvanometer and bridge. The least informed members of his subordinate staff look upon his performances with astonishment, because his work is done by the aid of tools with which they are not familiar. When they see the keys manipulated and the needle swing across the scale, their minds are pinned to the needle itself, and not to the ground or cross a mile or two away. No wonder that it looks mysterious.

It is because of his ability to have his mind directed to both ends of the wire at the same time that the wire chief holds his job. He finds it necessary to be well informed not only as to the nature of the troubles which afflict a telephone system, but their causes as well. The average trouble hunter is likely to lean pretty heavily on the man inside at the test set. He doesn't realize his advantage in being on the ground with his eyes ready to pick out the cause of the difficulty. He is more than likely to want to be led right up to the trouble. He doesn't want to find it, but rather to have it shown to him. Then, of course he will clear it, but in such a case he is not a real trouble hunter. He puts limitations on his own job. Still the wire chief who knows his business accepts these limitations and reckons on them. He gets results by the aid of an imagination well trained by practical experience. The kind of experience that is best calculated to give this training is an important thing for him to consider.

In the first place he ought to know the lines he is called upon to measure. It is not so easy to tell whether a trouble is in the house drop or the inside wiring, but there are men who can strike it right a great deal more often than they go wrong. The thing that helps most to do this is a genuine familiarity with the plant. It is often difficult to get outside and look the whole town over, and become familiar with the entire scheme of distribution, not only by plan, but by actual appearance. It takes time, but this time is well spent. It helps a man to think quickly, and think straight when there comes a rush of trouble. If he has the whole seat of the difficulty in his mind's eye he can do more than point out the trouble. He can direct repairs in detail, and give the benefit of the superior knowledge of construction methods which he should have in a most effective way at the times when it is most needed. This helps, for one thing, to do away with repeaters, those troubles which come up time after time in about the same way, and in about the same places; until they are bugbears of every maintenance department.

The inspection method is not the only one that is open to the wire chief who wants to know his job. He can make a study of the blue prints and plans used by the construction department and then talk things over with the trouble men for a few minutes at the close of each day's work. When this is done regularly, and carried out regularly in the right spirit on all sides, it is a very useful means of promoting efficient work. For one thing, it helps the men to know what are the most important branches of their work. As each man learns from all the others, the spirit of co-operation which can be built up, without any visible effort, is a great help to the production of definite results in keeping the plant in good shape.

The trouble records themselves furnish a supply of information which is almost invaluable. In large organizations groups of these records are analyzed very carefully by experts. This sort of work shows up clearly, by force of the unavoidable law of averages, the weak places in a company's plant. The wire chief can thus learn where a trouble of any given class is most likely to be found and often save time by having this part of the equipment examined first. Studies of this sort although difficult and puzzling at the start soon come to have an absorbing interest to those whose appreciation of their possibilities grows in proportion to the efforts they make. It is this kind of work which leads the wire chief beyond the immediate interest of testing into the larger fields of maintenance work, and by enabling him to approach the problems and consider results from a broader point of view, helps him to fit himself for more rapid advancement to the positions of greater responsibility.

ENGINEERING AND TRADING.

THE article on the cost of supplying current for the operation of branch exchanges, which appears in another part of this paper, serves incidentally to attract attention to the very close relation which the work of the modern telephone engineer bears to the practical problems of management. A few years ago it was thought that the young man with a technical training who went to work for a telephone company should be set to tinkering with batteries and generators, and might eventually be allowed to draw a few circuits or plans. Still, his field was pretty much restricted to the carrying out in detail of the broad schemes laid down by the general management, which were very frequently fixed upon after only a brief consultation with the engineering department.

At the present time conditions seem to be swinging just as far in the other direction. "Full information" is the cry of the manager, and the engineer is one of the men who is most likely to give the facts which determine the line of policy in handling a given branch of the business. In the first place he has to canvass all the plans for accomplishing the results which have been proposed. From them are eliminated at once those which would be inefficient from a service standpoint. The remaining projects are worked out carefully in detail and a statement prepared showing costs. The more expensive the work to be undertaken, the more elaborate become these studies, so that they frequently cover in detail several variations from a single general idea. The expense of making these studies is not small, but in the long run they pay by enabling the management to keep away from wasteful methods.

This is one of the reasons why it pays a company to have as good an engineer as can be obtained. Determination of costs depends so much on thorough experience with different classes of material, and labor under varying conditions, that to have information of this sort available is one of the most essential preliminaries to the fixing of prices and making of profits.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

LIABILITY CAUSED BY CONDUCTION OF STREET RAILWAY CURRENTS TO TELEPHONE LINE.

A street railway company and ourselves are occupying a street in this city (in Michigan) at the same time, and we find ourselves greatly annoyed by conduction or "leakage" from the railway company's plant. We were first in the street, and think that, for that reason, the railway company should be obliged to remedy the difficulty. We were not only here first, but had been using the street for six or seven years before the railway company was thought of. The company says that we ought to adopt a metallic circuit line. We think it is up to them. Please give your opinion on the subject. B. J. N.

IN cases of this kind the question does not depend so much upon prior use of the street as it does on the question of which company would be put to the greatest expense. In a case where the telephone company could install a metallic circuit by the adoption of a sufficient and comparatively inexpensive device, and the railway company could do so only at great expense and annoyance, the court refused to interfere in the interest of the telephone company.

The court based its decision for the railway company on the ground that the railway company was acting in accordance with the franchise granted by the State, that no negligence on its part had been shown, and that the damage to the telephone company was not a direct consequence of the construction of the defendants' roads, but were incidental damages resulting from their operation. Cumberland Telephone Company vs. United Electric R. Co., 412 F. 273.

STOCKHOLDERS MAY HAVE TO PAY DIFFERENCE ON STOCK BOUGHT BELOW PAR.

EDWARD M. COLLIE and Charles M. Myers, receivers of the Telephone, Telegraph and Cable Company of America, instituted suits in the District Supreme Court, at Washington, D. C., against A. L. Barbour for $12,500, and against Ann Augusta Thomas, widow of Samuel Thomas, for $25,000. In the declarations it is stated that this corporation, which was organized under the laws of New Jersey, had a capital stock of $9,000,000, made up of 600,000 shares of the par value of $15 per share. It is charged that Barbour purchased 2,500 shares of the capital stock, for which he paid $10 per share, and suit is now brought by the receivers to recover the sum of $12,500, being the difference between the amount actually paid and the par value of the stock purchased by him.

In the suit against Mrs. Thomas it is charged that she purchased 5,000 shares of this stock, par value of $75,000, for which she actually paid $50,000.

FORCING PAY STATIONS ON SUBSCRIBERS.

LOUISVILLE, Ky., is now face to face with the Bell Telephone Company in litigation growing out of an attempt by the city to curb this monopoly. The Bell company has brought suit in the Chancery Court to enjoin the city from collecting a license fee on telephone pay stations, which the company has been installing throughout the city, contrary to the wishes of the subscribers and users.

To make subscribers pay an extra fee when they telephone from any other telephone than their own, and to force druggists and some other retail business concerns to levy a tribute upon their customers, for the sole benefit of the telephone company itself, the Bell exchange has installed these pay stations in such stores, to the number of nearly 1,000. The company has refused to put in straight lines, even when merchants were willing to pay the full rate for unlimited service, permitting their customers to make telephone calls without charging a fee for this ordinary business courtesy.

The Bell monopoly, following its usual custom, paid no attention to the complaints of either the subscribers, who were denied the right to call up even their own home telephone, without putting a dime in the slot of the pay station, or the merchant who was willing to pay full rates for unlimited service, and the city authorities were finally appealed to for relief from this form of petty extortion.

It was found that the forcing of the slot machine pay stations upon subscribers was clearly outside of the rights granted by the franchise under which the company was operating, and the city authorities classed their installation as an outside matter subject to a license fee, the same as other legitimate slot machines in use.

The telephone company refused to pay the license fees and applied for an injunction restraining the city from collecting the fees or interfering in any way with the operation of the slot machines.

MUNICIPAL FRANCHISE HELD TO BE NECESSARY IN MINNESOTA BY FEDERAL COURT.

THE Northwestern Exchange Telephone Company must get permission from the city council of St. Charles, Minn., before it can establish a local exchange in that city. This is the decision rendered by Judge William Lochren of the United States Court at Minneapolis.

An action was brought in the federal court by the telephone company which asked for an order restraining the city council of St. Charles from interfering with the company while it put up poles and strung wires in that city. Judge Lochren in his order says that telephone companies have no right to place their poles or wires in the streets or alleys of any cities unless authorized by the council to do so. April 19, 1893, the legislature delegated to the cities and villages of the state the sole power of determining whether telephone companies might set poles and string wires in their streets and alleys. Since that date no telephone company has the right to occupy streets and alleys with poles and wires which had not been placed thereon prior to that date, without the consent of the city or village council. The fact that the company is engaged in delivering messages between the different states of the Union and is engaged in interstate commerce does not give it any greater rights in the streets of a city or village than it would have if it only did a local business. In either case the consent of the council is a condition precedent to its right to occupy the streets.

The Northwestern Telephone Exchange Company placed none of its poles or wires upon the streets of St. Charles until October, 1896, when it obtained from the council a franchise to extend its long-distance line through the city. The city does not question the company's right to maintain this line under the franchise granted by the council in 1896, but it has refused to permit the company to build other lines or occupy other streets in the city, and has passed an ordinance under which any employee of the company who may set any pole or string any wires not already placed, may be arrested, fined, and imprisoned.

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IN THE OPERATING FIELD

FEATURES OF NEXT WEEK'S OHIO CONVENTION WHICH WILL DRAW A LARGE ATTENDANCE.

THE Ohio Independent Telephone Association convention which will be held in Columbus Thursday of next week (March 28) will be a one-day convention this year. It will be a "busy" day and the "busy buzz" will be in constant operation from early morning, when Governor Asa L. Harris of Ohio takes down the receiver at the Hartman Hotel at 10 o'clock a. m., until the last "Hello" is called in the banquet room.

Governor Harris will deliver the address of welcome on behalf of the State of Ohio, and Hon. D. C. Badger, mayor of the city of Columbus, will welcome the delegates on behalf of the city. A response will be made by President Beam.

Features of the session will be addresses by President James B. Hoge, of the International Independent Telephone Association, by Attorney Clarence Brown of Toledo, and addresses from fraternal delegates from other states.

The toasts at the banquet will be responded to by some of the best known telephone men in the country. Last year's convention was one of the best in the history of the association. It is calculated to make the coming convention overshadow that.

NEW BRANCH EXCHANGE BUILDINGS OF THE HOME TELEPHONE COMPANY OF DETROIT.

THE illustration on this page shows the type of the three branch exchange telephone buildings which the Home Telephone Company of Detroit, Mich., is building in different parts of the city. The buildings were designed and the work of construction is being superintended by Messrs. Stratton & Baldwin, architects, with offices in the Union Trust Building.

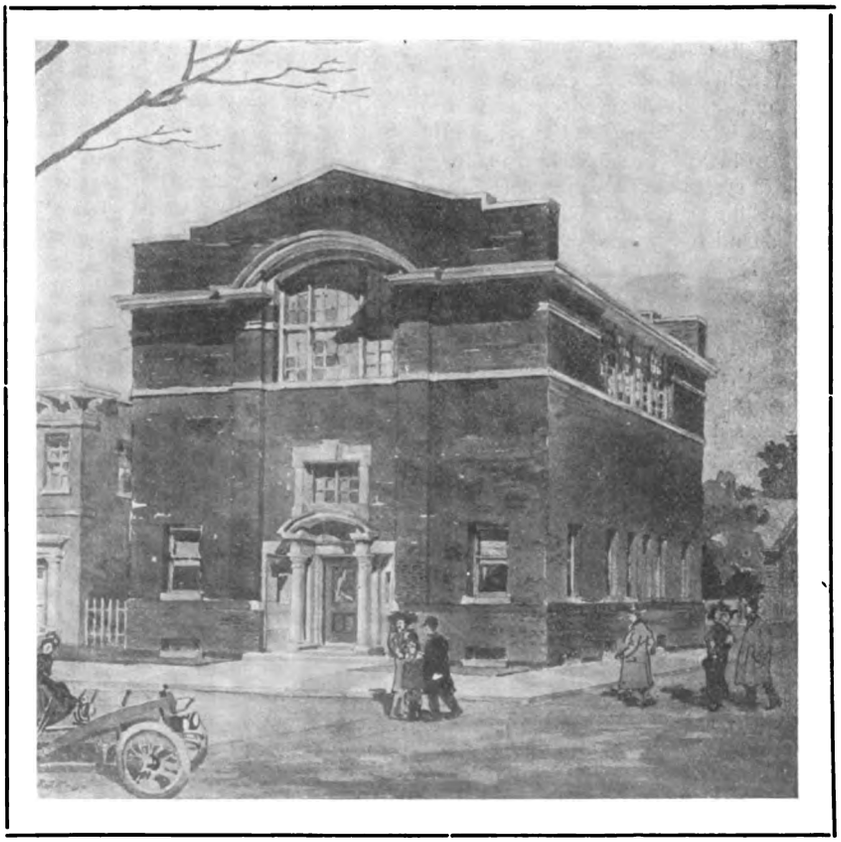
The East exchange is under process of construction at the corner of Sylvester and Field, and that exchange will serve the Eastern part of the city. Dalray and the Western part of the city will be served by the West exchange, which is under construction at the corner of Lafayette and Dragoon streets. The North Woodward district will be taken care of by the North exchange, which is being built at the corner of John R. and Bethune streets. These buildings are all about two-thirds completed and the construction is progressing at a very satisfactory rate.

The exterior is designed to conform with the Central exchange telephone building at the north-west corner of John R. and Madison streets, the material used being cut stone, terra cotta and dark red brick. The interiors of the buildings will be in all respects as complete and satisfactory as the central exchange. Each building will be fireproof throughout. A large and commodious basement will contain heating appliances and be used for general storage of telephone supplies.

The first story will contain the battery and machine rooms, the manager's and public offices, and the rest rooms and lockers for the operators.

The second story is one big room and is given over entirely to the switchboard, racks, etc. Stairways are so arranged that the upper run lands in the centre of the building.

The branch exchange buildings are so placed on the lot and the arrangement is such that future additions can easily be made by extending the structures to the rear. The type of building adopted by the Home Telephone Company for its sub-exchange purposes represents the latest and most complete ideas in the matter of sub-exchange telephone building construction and has already been taken as a model for a number of like buildings throughout the country. These buildings when complete will house the latest type of multiple lamp line signal central energy switchboards of 7,200 line ultimate capacity, which, with the necessary outgoing and incoming trunk lines, etc., will make a modern and up-to-date equipment.



Type of Buildings Which are Being Erected for the Branch Exchanges of the Home Telephone Company, Detroit, Mich.

MEETING OF OHIO MUTUAL COMPANY BRINGS OUT REPORTS OF SUCCESS.

AT Delta, O., the stockholders of the Citizens' Mutual Telephone Company came together early in the year for a discussion of subjects of common interest and the election of officers. The election of officers was as follows: President, T. H. Fraker; vice-president, A. Waldeck; secretary, E. G. Dailey; treasurer, C. A. Traill; trustees, Geo. Newell, Earl Slagle, C. D. Eberly and O. R. George.

Thirteen new stockholders joined the organization on the day of this meeting. The company offers an interesting example of what can be done in the way of building up a telephone service in a moderate size community in a short time, as when it commenced business on April 14, 1906, it installed twenty-six telephones. The company is operated on the mutual principle, and has to-day one hundred and seven telephones in actual service, while one hundred and twenty-six members have paid their dues, orders for the remaining telephones having been placed but the instru-

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ments not yet installed. This company has made arrangements which secure to its members the free use of about five thousand telephones, while the building of twenty-five miles of toll line, which is shortly to be undertaken, will put its subscribers in communication with four more exchanges, having a combined list of nearly one thousand subscribers. The Citizens' Mutual Company is a member of an association known as the Mutual Telephone Companies of Northwestern Ohio, in which each company is represented by one delegate. The officers of this association are: President, J. H. Leist, Liberty Center, O.; vice-president, Henry Briney, McClure, O.; secretary, E. G. Dailey, Delta, O.; treasurer, E. C. Woodward, Liberty Center, O.

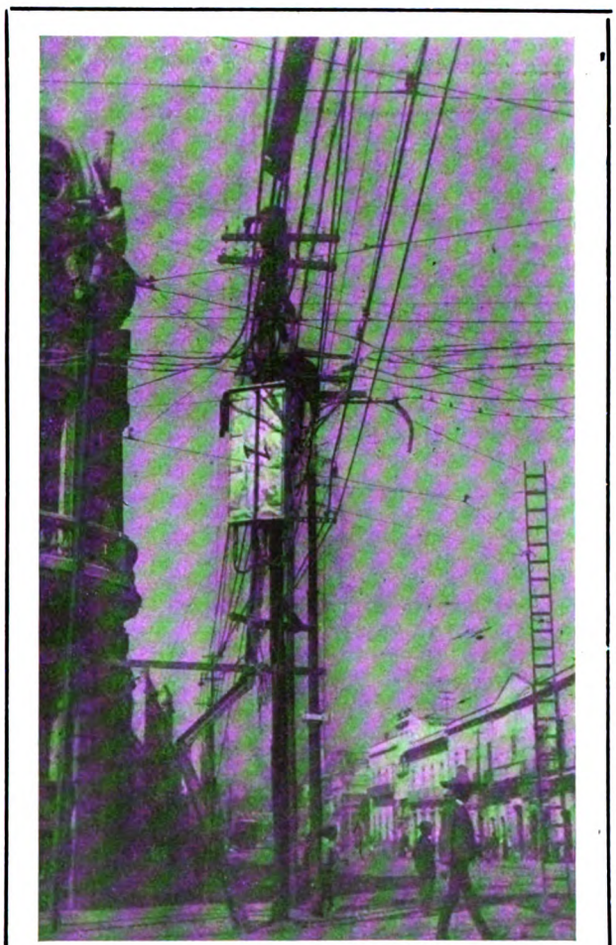
NEWS OF TELEPHONE PROGRESS IN MEXICO.

By "Noleye."

THE new Ericsson Independent exchange in the city of Mexico is nearing its completion. Underground ducts are all laid, and the greater part of the 600, 300 and 100-pair cables are now drawn in. Instead of the ten kilometers of underground ducts as first planned, nearly fifty kilometers have been laid down, some of the extreme ends of the routes reaching out into the suburban towns. The cross-connecting room is very busy and the distributing gangs are running branch cables up to the flat roofs of the buildings in every block, where they are divided up in ten and five pair branches, to serve each house.

There is not an open wire to be seen anywhere within the prescribed underground district, and as all the small cables which are run along the parapets and sides of the walls will be encased in wooden moulding to protect them from injury, the chances of trouble are reduced to a minimum.

In striking contrast are the lines of the Bell company, and occurrences like the one shown by the photograph reproduced on this page are quite common. The overloaded iron pole was broken in three places, by a so-called "accident," which happened late in February. Of course hundreds of subscribers were cut off and burned out in consequence of the crosses with the trolley wires, and some of them are not in order yet.



Bell Construction in Mexico City—Metal Pole Broken Down by Overloading, at Corner of Rosales and Punta Alvarado Streets.

The central energy board of the Ericsson company is connected up, and four operators are already kept busy making connections for the company's service lines and a few other lines.

The country lines (trunks to the suburban towns) are being fitted with cross-arms, braces and stays, ready for the stringing of wires.

In the State of Vera Cruz Messrs. de Corbera and Sitzenstatter have obtained a franchise for fifty years for exchanges in Vera Cruz, Xalapa (the State capital), Orizaba and Cordoba, and such other cities which they wish to place on their list, and for lines connecting these cities. To provide for any contingency, there is a provision in this concession which gives the company operating the exchanges and lines referred to the right to establish wireless telephone systems between all the cities which they have connected by ordinary lines, and also providing that no other similar wireless installation can be erected between any two points in the State, which might in any way interfere with the good working of the installation of the concessionaires. Some New York capitalists are interested in this franchise and it is understood that some of their engineers are en route for Mexico to study the proposition at an early date. Once the lines of this company are built between Vera Cruz and Orizaba, the most important step toward a long distance line between Mexico City and the seaport towns will be completed. It will not be many months afterward that the more densely populated portion of the Republic may count upon an efficient long distance service.

INDEPENDENT COMPANY GETTING MUCH BRANCH EXCHANGE BUSINESS IN JOHNSTOWN, PA.

NEW buildings which are being erected and a number of the foremost business establishments in Johnstown, Pa., have made arrangements for branch exchange service, and will obtain switchboards and instruments from the Johnstown Telephone Company, with which trunk lines will connect. For some time past the larger business establishments have been giving special attention to branch exchange service, and many of them have installed this system It has given such good results that business houses are adopting it rapidly, finding that by its use they are able to make the service of the Johnstown Telephone Company very valuable to them. At the present time the Independent system has grown to very good proportions, having in the neighborhood of 4,700 subscribers, of which about 500 have been added since the last directory was published, in September, 1906.

CANADIAN INDEPENDENTS IN HALDIMAND COUNTY CONSOLIDATE.

A FEW months ago a number of local Independent telephone companies were organized in Haldimand county, and franchises were granted in Caledonia, Hagersville and Dunnville. Recently these separate companies, believing it to be to their interests to form a closer association, finally came together and merged their interests in a new organization, which has been given the name of the Dunnville Consolidated Telephone Company, Ltd. It has obtained a charter empowering it to conduct a telephone business in the county of Haldimand, and the townships in Walland, Lincoln, Wentworth and Brant, immediately adjacent to Haldimand. Its charter gives this company the right to operate lines up to within a few miles of Hamilton, and practically up to the limits of Brantford.

The success of the company in obtaining subscribers is said to have been extremely good. Reports show that in Caledonia several days ago fifty subscribers' contracts were obtained in the village, and seventy among the neighboring farms, and that work is going on rapidly. At Wellandport, twenty subscribers were obtained in one evening, and similar hearty support has been received at other places. The Dunnville company now reports over four hundred subscribers, with new ones coming in every day. This is not the only successful Independent company in Haldimand county, as in the southwestern part the Erie Telephone Company, Ltd., is doing very well.

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TELEPHONE PATENTS

TELEPHONE CALL REGISTER.

Joseph J. O'Connell, Chicago, Ill., patents (No. 837,951; dated December 11th, 1906; filed July 19th, 1902; serial No. 116,164) and assigns to the Western Electric Company, Chicago, Ill., a telephone call register.

At the subscriber's station is a call recording device of the form described in the patent, consisting of a train of wheels and other mechanism, with proper means of controlling it to effect the registration of calls. At the central office is provided a special cord circuit, by which the operator may cause the registering device to transmit over the line a series of impulses which will cause the number of calls registered up to that time to be indicated on a recording device. The transmission of this record does not affect the condition of the apparatus at the subscriber's station in the arrangement covered by this patent.

TELEPHONE SYSTEM.

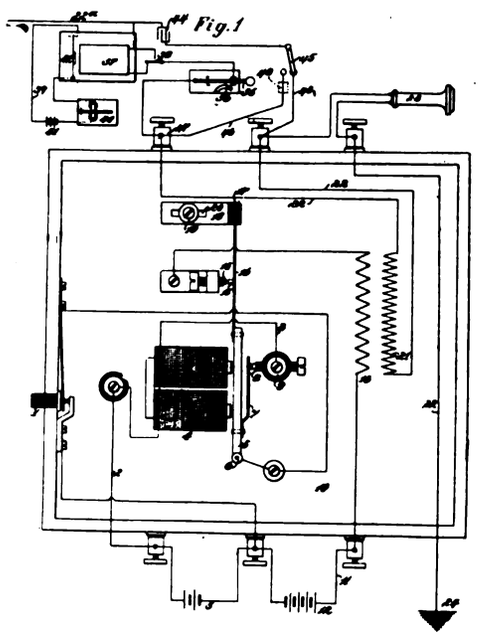
Isidor Kitsee, Philadelphia, Pa., patents (No. 846,413; dated March 5, 1907; filed April 8, 1904; serial No. 202,209) a telephone system.

This patent describes a system designed with the object of providing an arrangement of circuits which will permit a large number of subscribers' lines to be accommodated on a switchboard. It also describes means of simplifying the construction of a board, with the object of allowing a large number of connections to be brought into a limited space.

ELECTRIC CALLING APPARATUS.

Charles Adams Randall, New York, N. Y., patents (No. 841,476; dated January 15, 1907; filed December 22, 1903; serial No. 186,254) an electric calling apparatus.

This invention covers a device for the calling of telephone instruments used in connection with telegraph instruments on



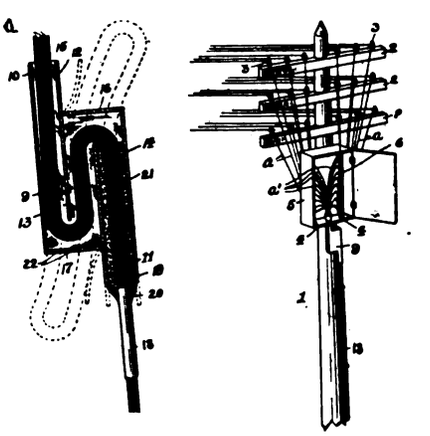
a composite line. When push button 1 is closed it completes a circuit through the magnet of vibrator 4, including the contacts 7 and 8 and battery 3. This starts the vibrator arm in motion, alternately opening and closing contacts 14, 15, these contacts being closed when contact 8 is open and vice versa. Contacts 14, 15 are in series with the primary winding 13 of an induction coil, battery 12 supplying the energy.

The action of the vibrator causes an alternating current to be produced in the secondary winding 21, which passes out to line. Receiver 23 or some other call receiving device is used for the reception of the alternating currents, which produce the required signals, consisting in the case of the telephone receiver of a humming noise, without affecting the telegraph instruments on account of their high frequency.

POT HEAD.

William Callahan, South Bend, Ind., patents (No. 845,614; dated February 26, 1907; filed May 10, 1905; serial No. 259,719) a pot head.

This invention relates to a cable terminal of the pot head



type. A receptacle 9, made of lead, has extended walls 13, 14, which serve to divide the chamber into three communicating compartments, through which the short rubber insulated wires 15, connecting the cable conductors to the overhead wires, may be led. These wires may be readily placed, owing to the fact that the upper and lower ends, 16, 17, are hinged and may be swung outward, permitting the hands to be inserted. After connections are made and the wires suitably arranged, the pot head may be soldered to the lead sheath of the cable 18 at point 20, after which the compartment 21 may be filled with a compound to seal the joint. As the bottom, 7, of the pot head is perforated, any moisture finding its way along the wires and dripping from them will pass out before going to the portions nearest to the paper covered cable wires.

INTERCOMMUNICATING SYSTEM.

William W. Dean, Chicago, Ill., patents (No. 843,329; dated Feb. 5, 1907; filed June 15, 1903; serial No. 161,534) and assigns to Kellogg Switchboard and Supply Co., Chicago, Ill., an intercommunicating system.

In the system described in this patent a pair of line wires extend from the positive and negative poles of batteries respectively, through windings of a retardation coil and thence in multiple to the line springs of jacks at the several stations. Three point jacks are used and the third connection is multiplied

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PATENTS—Continued.

throughout the system, but is not carried to the battery. At each station one side of a vibrating bell is connected to this third contact of the jack and the other side to a common return wire leading to positive battery. The tip of the jack is shown connected to negative battery while the ring goes to the positive side. At each station there is provided a talking set consisting of a transmitter and receiver in series with the usual hook contact. These are connected to the tip and ring of the plug respectively, while the sleeve of the plug is wired to one point of a circuit closing key, the other side of which is connected to the tip. When this key is closed, with the plug in the jack, it will be seen that it causes battery current to pass through the signaling bell of the station corresponding to the jack. When the plug at this station is inserted in the jack bearing the number of the station, in response to the signal, conversation may be carried on over the metallic line.

CARBON BALL TRANSMITTER.

Kelley M. Turner, New York, and Norton W. Johnston, Chappaqua, N. Y., patent (No. 844,635; dated February 19th, 1907; original application filed September 8th, 1905; serial No. 277,616; divided and this application filed September 8th, 1905; serial No. 277,615) and assign to General Acoustic Company, New York, a carbon ball transmitter.

This patent covers a transmitter which includes a carbon block having in its face recesses with polished surfaces which contain minute carbon balls. Mounted immediately in front of and very close to the surface of this block is a diaphragm, which retains the carbon balls in the cavities. The size of the balls varies from two-tenths to five-tenths of a millimeter in diameter. The inventor states that these balls are many times smaller than any that have been previously employed in a transmitter. With the larger balls which have heretofore been used their inertia was such as to prevent them from conforming exactly to the movement of the diaphragm. Furthermore they frequently completely broke contact with the diaphragm, and in returning to position struck its surface with such a hard blow as to produce too great a contact, and one having no relation to the sound transmitted. This is stated to be the defect which tends to produce the well-known cracking or frying sound. The small balls, on account of their reduced inertia, can attain a proportionately high rate of vibration, and thus do not produce the frying sounds which injure the efficiency of the transmitter.

REGISTERING DEVICE FOR TELEPHONE EXCHANGES.

Frank A. Lundquist, Chicago, Ill., patents (No. 846,328; dated March 5, 1907; filed October 20, 1904; serial No. 229,233) a registering device for telephone exchanges.

This device has for its object the registering of calls made from a station which are completed, without registering calls which are not answered. The apparatus is so arranged that the registering operation is completed only when the called subscriber removes his telephone from the hook.

TELEPHONE DICTATING APPARATUS.

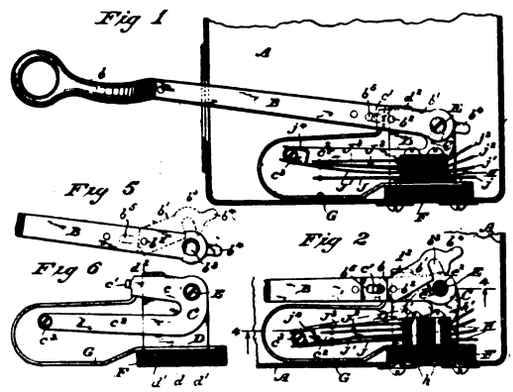
Kelley M. Turner, New York, N. Y., and William F. H. Germer, Hoboken, N. J., patent (No. 843,186; dated February 5, 1907; filed April 30, 1906; serial No. 314,000) and assign to William F. H. Germer, Hoboken, N. J., a telephone dictation apparatus.

By means of this invention communication may be carried on between persons in different rooms in ordinary conversational tones without a near approach to the transmitting or receiving instruments. The conditions are especially suited to the giving of messages to a stenographer. The inventor shows how this can be accomplished by the use of a loud-speaking transmitter and receiver respectively, joined to separate circuits extending between the two terminals. The two instruments are on separate circuits in order to prevent disagreeable side-tone and allow simultaneous communication in both directions. Should secrecy at the receiving end be desired, it may be secured by turning a switch mounted in an ordinary receiver, which cuts it into circuit at the same time throwing out the loud-speaking receiver. Auxiliary switching and signaling arrangements which have a particular application are described.

TELEPHONE HOOK SWITCH.

Charles C. Cadden, Cleveland, O., patents (No. 843,998; dated February 12, 1907; filed March 15, 1905; serial No. 250,233) a telephone hook switch.

This hook skitch has a removable lever and the contact springs and actuating member are permanently attached to a support-



ing device, which may be fastened within the telephone box, forming a complete unit. Block *F*, of non-conducting material, forms the base upon which are mounted contact springs associated with supporting member *D*, secured in place by screws and dowel pins inserted in the insulating block. Near the top of the standard, stud pin *E* forms a pivot for the hook lever, which is removable, and also the operating lever *C*, which is permanently mounted upon the pivot. Lever *B* is perforated with a hole b^5, which when in position is engaged by the side projecting lug c^5. The closing of the latch b^1 over the pivot pin *E* locks the two members together, so that any motion of the lever *B* is communicated to the operating lever *C*. Lug d^2 on the supporting standard limits the upward motion of the hook lever. Stud c^3 controls the operation of the contact springs. The hook lever may be readily disengaged from its pivot and removed from the interior of the box by releasing latch b^1 movable by the projecting lug b^4, which serves as a handle.

RECEIVER SUPPORT.

John Heisch, Jr., Allegheny, Pa., patents (No. 844,722; dated February 19th, 1907; filed December 11th, 1906; serial No. 347,283) a receiver support.

The inventor describes a receiver support comprising a metal frame with a pivoted arm for holding the receiver. In its normal position this arm maintains contacts in an open condition, but when a person listens he is supposed to press against the receiver and force the arm to one side, thus closing the contact and completing talking circuits.

TELEPHONE SIGNAL.

Gustavus W. Schuessler, Mason, Texas, patents (No. 840,589; dated January 8, 1907; filed September 23, 1905; serial No. 279,865) a telephone signal.

This patent covers a drop which signals the operator by raising its armature into view. The armature is locked and held in its raised position until released by the act of inserting a plug into the associated jack.

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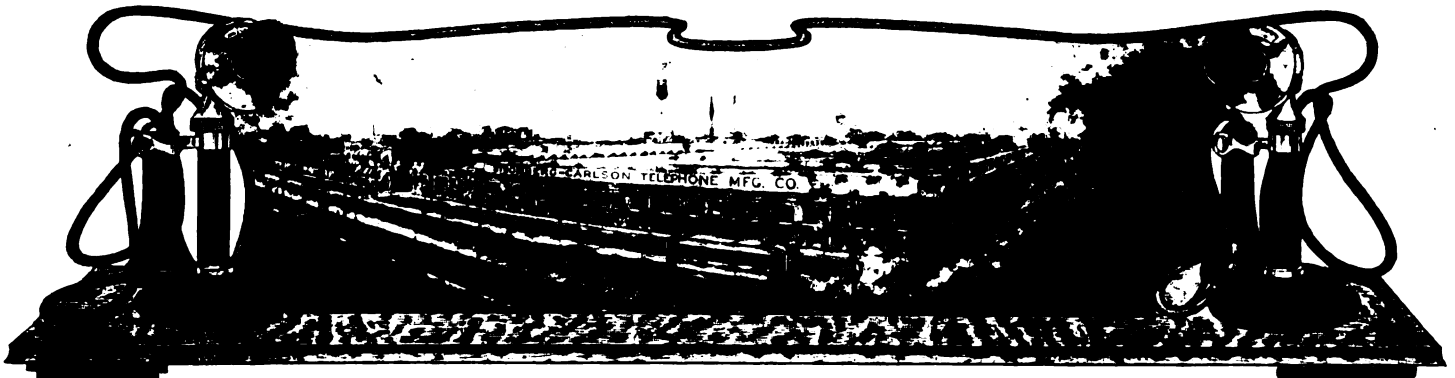

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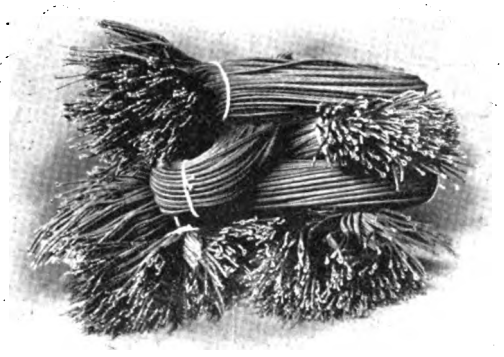
FOR

Desk Stand, Receiver, Microphone, Adjustaphone of any form.



Braided copper tinsel, braided cotton and green spun machine silk

WORSTED RECEIVER CORDS.

Any form of terminals or loops.
Cordage same construction in large quantities.

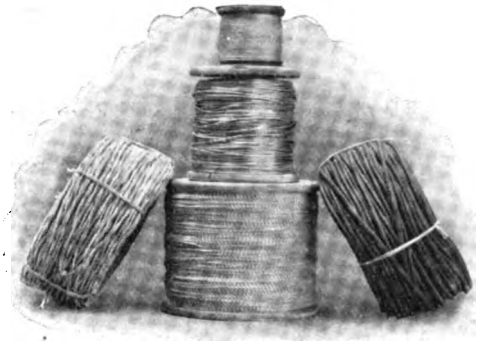
"STROMBERG-CARLSON" SWITCHBOARD CORDS

Tinsel and Steel

Braided Copper Tinsel, Tussah Silk and cotton covered conductors.
Steel, Tussah Silk, cotton and linen covered conductors.
Quantity orders in different colors if desired.
Any form or size for plugs in standard lengths.
Finest Switchboard Cords manufactured. Metal tips designed to meet the requirements.

"STROMBERG-CARLSON"

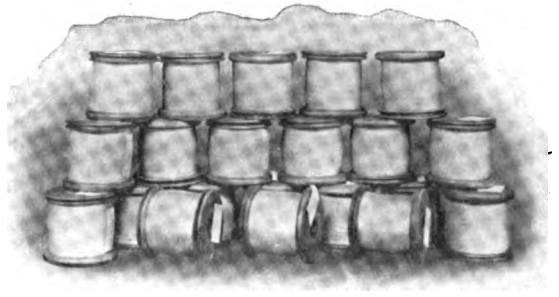
FLUX SOLDER (Rosin Core).
SWITCHBOARD WIRE (Color Coded).
JUMPER WIRE
ANNUNCIATOR OFFICE WIRE



These articles are constantly required. We manufacture them and carry stock in Rochester in all standard sizes and grades.
Orders for immediate delivery solicited.
Prices on application.

"STROMBERG-CARLSON" MAGNET WIRE

Bare and Tinned Copper. Green and White Italian Tram Silk insulation.



First grade single white silk covered magnet wire carried in standard sizes at Rochester Factory.
Orders for any quantities from No. 18 B. & S. to No. 40 B. & S. earnestly solicited.
We use only Italian Tram Silk of perfect quality. No *short end* or *loaded* silk used.
Write for prices now.

Products of Quality are Stromberg-Carlson Products

Prices for any quantity of these articles furnished promptly.

STROMBERG-CARLSON TELEPHONE MFG. CO.
ROCHESTER, N.Y. CHICAGO, ILL.

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IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

CONDUIT COST.

ENGINEERS find that the cost of maintenance on conduits varies inversely with the quality of the conduits. Poor conduits are expensive at any price. The cost of laying is so high and the work to be performed is so important that the necessity for careful inspection of conduits is becoming more and more recognized.

Starting as it did thirty-five years ago, the Rochester Sewer Pipe Company soon learned that to gain the approval and confidence of the best engineers it must employ the most scientific methods to insure a uniformly high grade product. This eliminates all delay and annoyance consequent upon sorting out defective ducts. The ROCHESTER SEWER PIPE COMPANY at Rochester, N. Y., is always glad to tell prospective builders of underground systems of the special features which make its products particularly valuable.

THE TELEPHONE APPLIANCE COMPANY, Minneapolis, Minn., has recently introduced the Dollar Yankee Pole Seat. It is made from 1¼ x 1¼ inch angle iron, coated with asphaltum, and has a 1⅛ inch wood seat dipped in creosote and bolted to angle iron with three bolts.

THE CRESCENT LUMBER COMPANY will hereafter be the official company name for the Glenn-Kline Lumber Company. No other change has been made in the corporation and its headquarters still remain at Pittsburg, Pa., in the Whitfield Building. The company reports that it is in a position to furnish cypress poles in almost any specification for immediate shipment. The company has over 10,000 in stock at the present time on the sidings in its yards and is producing these poles at the rate of about 500 a day. It is in a particularly good condition to make immediate shipment of heavy poles.

THE EVERSTICK ANCHOR COMPANY, St. Louis, Mo., has received a letter from the LaBelle Telephone Company, LaBelle, Mo., stating that the Everstick anchor has been given a thorough trial on a corner pole holding twelve wires, in a low place where water stands continually, but the anchor has not moved the fractional part of an inch.

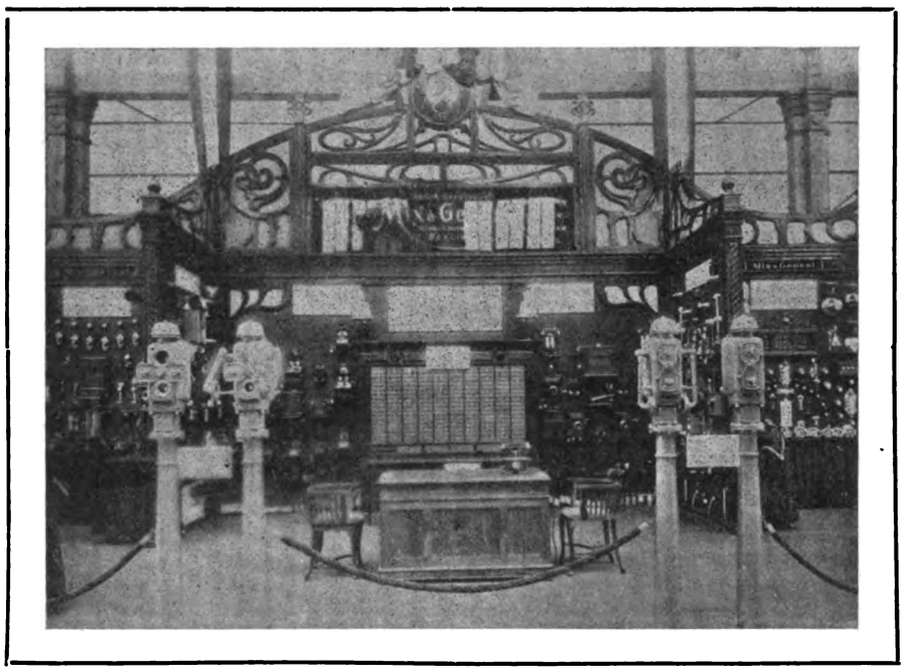
ROLFE ELECTRIC COMPANY, Rochester, N. Y., invites companies interested in telephone protectors to ask for particulars of the new Rolfe fuse box and protector. It has several new features of unusual interest.

THE CARBOLINEUM WOOD PRESERVING COMPANY, Milwaukee Wis., is prepared to send out copies of letters received from prominent engineers of telephone companies and other large users of wood, showing the actual results obtained by the use of its compound, Avenarius Carbolineum. Although this materially increases the life of telephone poles, the result is obtained at a comparatively low cost, owing to the manner of application. All that is necessary is to apply it with an ordinary paint brush.

DETROIT INSULATED WIRE COMPANY, Detroit, Mich., advertises that it can make immediate shipment of rubber insulated, twisted pair drop wire. Its new factory is modern in every respect.

GERMAN TELEPHONE APPARATUS.

THE illustrations of various different types of equipment for telephone central offices and subscribers' stations, as well as for certain other classes of electrical supplies which accompany this article were made from photographs of an exhibit of the Deutsche Telephonwerke of Berlin. They show three distinct views of a single exhibition compartment, taken at the International Exhibition at Milan in 1906, where most of the prominent European manufacturers of telephone apparatus were represented. This organization now manufactures a complete line of telephone supplies and other electrical apparatus, including an electric siren which has won very favorable comment from users in many places.



Front View of Exhibit of Telephone Apparatus of Deutsche Telephonwerke at Milan Exposition.

At the Milan Exhibition there were distributed catalogues printed in English, a number of copies of which are still available, and may be obtained by writing to the company at Zeughofstrasse 6-7, Berlin So. 33, Germany. This book tells of the simple origin of the company, when in 1887 Mr. Robert Stock, with his associates, opened a very small shop, in which Mr. Stock himself worked as turner and fitter with primitive tools. With the introduction of the multiple switchboard the firm realized the opening which existed in telephone work, and took up the design and construction of multiple boards with considerable energy. Its success led to its appointment by the Imperial German Post Office to build the comparatively large telephone exchanges at Charlottenburg, Hanover and Leipzig. Since that time the company, which since the retirement of its founder has assumed the name of the Deutsche Telephonwerke, has rapidly expanded its business, and it is building apparatus for and installing many large exchanges in Germany and other foreign countries. The line of apparatus manufactured includes telephone instruments for houses, hotels and business

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Easophones

The WIRE and TELEPHONE COMPANY of AMERICA

ROME, N.Y.

LONG DISTANCE HAND TELEPHONE

Lowest Maintenance Cost

Solid Metal Frame Inclosed in Vulcanized Hard Rubber

Only Nine Exposed Parts

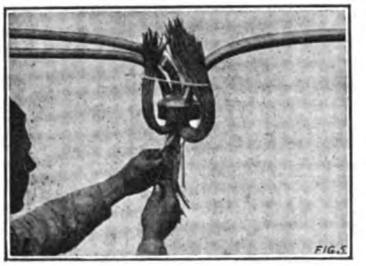
NO EXPOSED CONNECTIONS

PRACTICALLY INDESTRUCTIBLE

LET US SEND SAMPLE EQUIPMENT

Write for Bulletin No. 101 Giving Full Information

A MONEY SAVER



A MONEY SAVER

YOUR TIME

will earn money in direct proportion to your use of it. The use of the Hargis Cable Splicing Joint will enable you to save time. It will enable your regular linemen to make a better splice than an expert cable man. The picture above shows how easy it is to splice pairs by means of the Hargis Joint. They can all be tied out of the way while the splicing is going on.

The Hargis Joint is not a wiped joint in any sense of the word. The cables are simply put thru the cap and lead gasket and the lead is then poured in until the cup formed by the gasket and the brass cap is full. What wiping is done is simply to smooth off the rough edges, and does not add to the weather-resisting qualities of the joint.

HOW TO SAVE YOUR TIME

Let us send you descriptive matter of the Hargis Cable Splicing Joint shown above. By its use you can make a better splice in less than one half the time it takes to make a horizontal wiped joint, and at the same time you can always get into it by means of special tools to test out for trouble along the line.

It will pay you to write for our descriptive matter.

W. N. MATTHEWS & BRO.

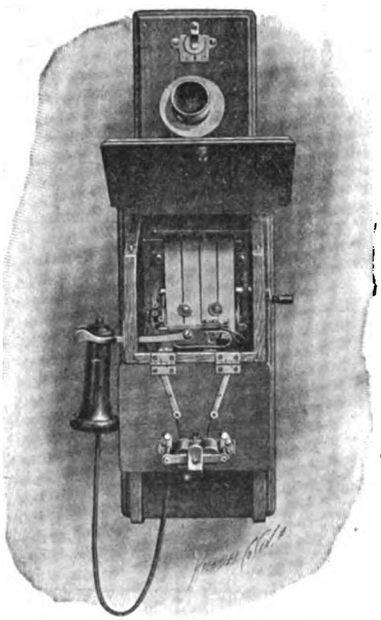
Manufacturers of Patented Money Saving Specialties

242 North Second Street ST. LOUIS

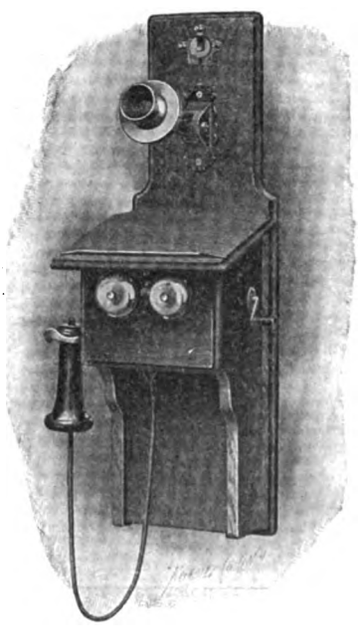
COMMON BATTERY TYPE CABINET MAGNETO PHONES

Sumter Standard Parts—with a few useful features the other fellow hasn't got yet

GET BULLETIN 41



WRITE TODAY



1907 MODEL

THE SUMTER TELEPHONE MFG. CO. ... SUMTER, S. C.

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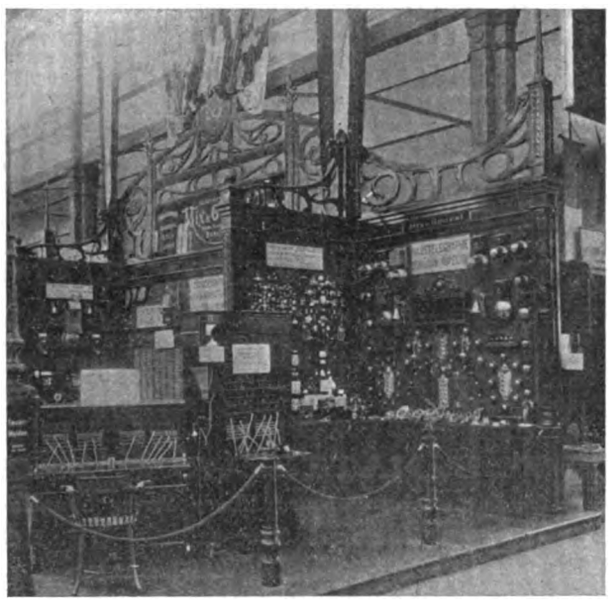
establishments of all kinds, with numerous special designs, such as those for railway and mining use, and for military purposes. Switchboards of all sizes and classes are made, and described in the company's new catalogue.

In 1905 the company at the international exhibition at Liege



A Portion of the Exhibit of Deutsche Telephonwerke at the Milan Exposition, Showing Switchboards, Telephone Bells, etc.

was awarded the highest testimonial, the Grand Prix. In 1906, at Milan, its apparatus met with equally favorable consideration at the hands of the commissioners, having been twice awarded a "Grand Prix" in addition to a gold medal.

THE SELECT TELEPHONE MANUFACTURING COMPANY, Springfield, O., will mail prices and descriptive matter of its central energy party line lockout device, over 1,000 of which are in use in the State of Ohio alone. The necessary apparatus can be connected to any make of common battery telephone and will work in connection with any common battery switchboard.

THE MERKEL MOTOR COMPANY, Milwaukee, Wis., is introducing the 1907 model "Merkel" spring frame motor cycle, for the use of trouble and repair men. During the past few years many up-to-date companies have purchased motor cycles for their men, resulting in securing a bigger day's work, which more than pays for the investment.

FISHER-STEVENS COMPANY, Charles City, Iowa, is making a specialty of sound proof telephone booths. It can supply booths from stock or make up special designs to order. Catalogue and prices will be sent on receipt of a request.

THE F. BISSELL COMPANY, Toledo, O., has just sold an order calling for 100 pole seats to the Mount Vernon Home Telephone Company, Mount Vernon, O. The Bissell Company reports that it has promptly filled this order in a single shipment. Business in other "Security" specialties is said to be very brisk. Leaflets describing this line will be sent on request.

FRANK B. COOK, 238 West Lake street, Chicago, Ill., believes that in his new No. 10 protector he has solved some of the puzzles which have in the past caused so many troubles to occur in the main distributing frame in a very effective way. He is enthusiastic about the way the apparatus is showing up in exchanges where it has been installed, and is sending out very interesting information about protectors in general, and the No. 10 in particular, to those who ask for it.

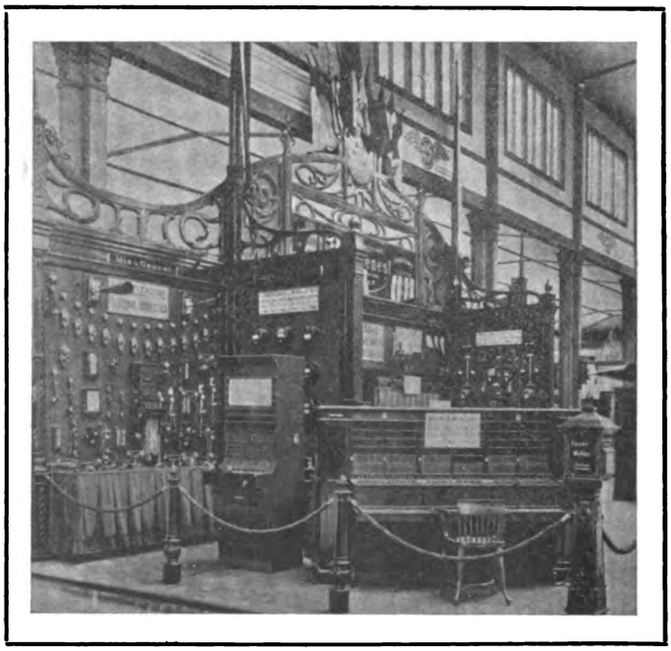
OLIVER MANUFACTURING COMPANY MOVES INTO LARGER QUARTERS.

THE rapid growth of the business of the Oliver Manufacturing Company of Philadelphia, makers of and jobbers in electrical apparatus, has necessitated its securing larger quarters and the company will, on Aprii 1st, occupy commodious offices and salesrooms at No. 1020 Walnut street. In its new quarters it will show a most complete line of interior telephone systems, annunciators, watchmen's clocks, electric lighting fixtures, etc.

Among the specialties which this company is placing on the market are the "Flexiphone" (flexible telephone), the "Flexilite," an automatically adjusted electric light, and the "Equipoise" telephone arms, which are so widely and favorably known.

THE SUMTER TELEPHONE MFG. CO., Sumter, S. C., is distributing a folder which shows an interesting ringing code for a rural party line. The signals are worked out for twenty parties in combinations of long and short rings. Fifteen parties are signaled by four rings or less, and five rings are required to call each of the other stations on the line.

The same folder bears instructions concerning simple methods of testing for and locating the causes of the most common telephone troubles. These are briefly worded, and so thoroughly practical that they should be useful many times in the course of a year when a line suddenly gets out of order. An attractive border for the sheet is formed by the use of illustrations of the various types of magneto instruments and switchboards made by



Wall and Hand Type Telephones and Switchboards Exhibited by Deutsche Telephonwerke at Milan International Exposition.

the company. Small telephone companies looking for this kind of information can obtain copies of the folder free of charge by writing to the company.

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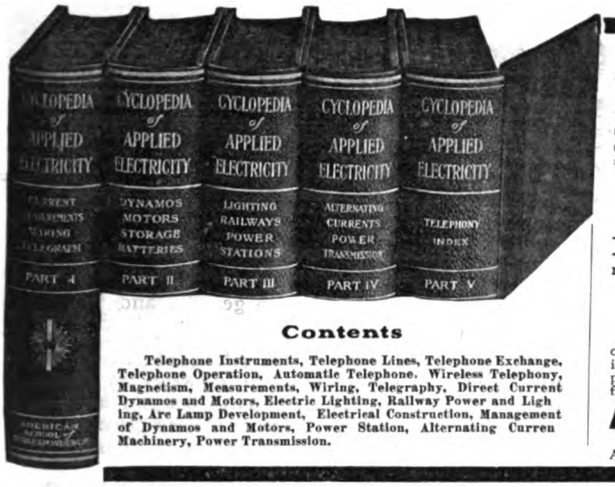


Contents

Telephone Instruments, Telephone Lines, Telephone Exchange, Telephone Operation, Automatic Telephone. Wireless Telephony, Magnetism, Measurements, Wiring, Telegraphy, Direct Current Dynamos and Motors, Electric Lighting, Railway Power and Lighting, Arc Lamp Development, Electrical Construction, Management of Dynamos and Motors, Power Station, Alternating Curren Machinery, Power Transmission.

FOR TELEPHONE MEN and ELECTRICIANS

This Cyclopedia contains more information on electricity and telephony than any other work published. It thoroughly explains all the duties of the manager, lineman, switch board and troubleman. It not only fully explains the entire operation of a working telephone system, but it tells how to construct such a system. Treats fully on the Automatic Telephone and Wireless Telephony. Filled with information on electricity in all its forms—undoubtedly the best set of books for the telephone man who wishes to secure a fine position and a large salary.

Cyclopedia of Applied Electricity

Five large volumes—2,500 pages,—2,000 full page plates,—size of books 7 x 10 inches; —bound in red morocco, fully indexed, Diagrams, Descriptions, Formulae, Sections, Tables —supplemented by practical test questions—prepared especially for practical men who have no knowledge of advanced mathematics.

Regular Price $30.00—Special 30 Days $19.80

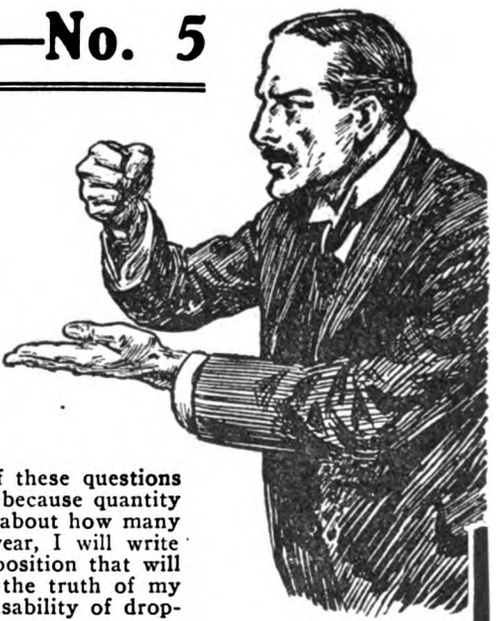
Free for Inspection

Sent, express prepaid, for five days' FREE examination if you mention **American Telephone Journal.** Pay $2.00 cash and $2.00 a month thereafter until you have paid $19.80, if you keep the books. We send for them, at our expense, if they do not meet your needs. The only reason this set is offered at such a low price is to acquaint the public with the superior instruction of the American School of Correspondence—these books being partly compiled from the instruction papers.

AMERICAN SCHOOL OF CORRESPONDENCE
Chicago

Amer. Tel. Jour., Mar. 23, '07

Talks With The Buyer—No. 5



I am not doing a monologue act with these talks. Perhaps you can't hear the other buyers talking back, but if you could see the letters, questions asked and orders received, you would fall in line.

A Word About Telephones

One man wrote: "What does the word 'Telephone' stand for in your name? Do you make telephones?" A natural question. A helpful suggestion. I have been so enthused over the especially attractive "supply" offerings that I have not emphasized our position as telephone manufacturers, our ability to furnish absolutely high grade equipment and at attractive prices. There are over a hundred manufacturers of telephone equipment in this country. Half of them are soliciting a share of your orders. Some exchanges have samples of at least a quarter of the number. At times you wish there were only two or three in the business. You ask: "Why should I buy 'Central' 'phones? Do they make their own equipment? Are they offering a supply house, 'mail order' grade or High Grade 'phone? Can they give me the quality that I require? Have they the factory facilities for making such prompt deliveries as I demand? Wherein is their proposition different from any one of a dozen presented to me?"

You can readily see that in this half page I cannot answer all of these questions satisfactorily either to you or to me, nor can I very well quote prices, because quantity and your individual requirements govern the case. If you will tell me about how many 'phones you are going to purchase in the next ninety days or one year, I will write you a personal letter by return mail and will make you a special proposition that will be well worth your while to entertain, submitting samples to prove the truth of my statements. Does not your good business judgment suggest the advisability of dropping me a line now before you put this paper away?

CENTRAL TELEPHONE & ELECTRIC CO., Makers of High Grade Apparatus Dealers in Telephone Supplies **St. Louis AND Dallas, U. S. A.**

Cut this out and enclose with a Postoffice or Express Money Order or A DOLLAR BILL, at our risk.

SUBSCRIPTION BLANK

.....190

American Telephone Journal
100 William St., NEW YORK

Enclosed find.. .....for One Dollar ($1.00)
Subscription for One Year.

Name.....

P. O. Address.....

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NEW COMPANIES.

LESLIE, ARK.—A Farmers' Telephone Company has been organized at Leslie, whose intention is to connect with a line being built from Campbell to Marshall.

JACKSONVILLE, FLA.—Owing to the failure to receive the service promised by the Bell Telephone Company, the citizens of the town have organized a stock company and elected the following officers: President, N. Johnson; vice president, N. Adams; secretary, A. F. Hudson; treasurer, H. C. Pease; directors, T. R. Woodson, J. W. Ettille, N. Johnson, A. W. Jackson and E. L. Patterson. The capital necessary has practically all been subscribed.

SODA SPRINGS, IDAHO.—Amended articles of incorporation have been filed by the Soda Springs-Lago Telephone Company. The capital stock is placed at $10,000, of which $2,500 has already been subscribed. The principal place of business is to be at Soda Springs, and the following directors have been elected: E. D. Whitham, J. H. DeWitt, W. H. Anderson, of Soda Springs; Davis Miles, of Niter, and C. H. Mickelson, of Bench.

DWIGHT, ILL.—The Home Telephone Company, of Dwight, has been incorporated, with a capital stock of $1,500. Among the incorporators are R. E. Bunting, John Hoffman and M. B. Butz.

HOYLETON, ILL.—The Rixman Telephone Company, of Hoyleton, has been incorporated with a capital stock of $2,500. Among the incorporators are H. W. Rixman, H. F. Rixman and F. D. Rixman.

LEWIS, IND.—Articles of incorporation have been filed by the Lewis Telephone Company, and the following directors named: C. C. Givens, W. W. Woodron, C. W. Boston, J. N. Woods and A. B. Melch. It has an authorized capital stock of $10,000, and will operate in Vigo, Clay, Sullivan and Greene counties.

ROACHDALE, IND.—An Independent telephone company has been organized at Roachdale.

ALDEN, IOWA.—An Independent telephone company is being formed by the citizens of Alden. Among those interested in the enterprise are G. E. Stronger and W. E. Trousdale, whose intention it is to apply for a twenty-five year franchise at Alden.

FARLIN, IOWA.—The Bristol Mutual Telephone Company, whose principal place of business is to be located at Farlin, has been incorporated with a capital stock of $2,500, and the following officers elected: D. J. Merriam, president; J. R. Mathews, vice president; E. A. Cairns, secretary; C. F. West, treasurer; M. T. Condon, W. J. Banning and J. A. Snively, directors.

MONMOUTH, IOWA.—Articles of incorporation have been filed by the Keystone-Monmouth Telephone Company. It has an authorized capital stock of $2,000, and its principal place of business will be located at Monmouth, from which point lines will be built to Keystone and other towns. The officers of the company are: President, D. B. Staggs; vice president, E. L. Barnes; secretary, L. B. Steward; treasurer, B. R. Dye.

ROCKWELL, IOWA.—The Rockwell Farmers Mutual Telephone Company is being organized by the farmers at Rockwell. It is to have a capital stock of $3,000, and the following officers have been named: President, J. H. Brown; vice president, D. Calahan; secretary, W. A. Storer; treasurer, J. B. McGaheran.

WASHTA, IOWA.—A Co-operative Telephone Company has been formed at Washta, with W. B. Chapman as president and F. L. Cooper as secretary.

SUMMER SHADE, KY.—The Summer Shade Telephone Company has been incorporated with a capital stock of $250, and the following are among the incorporators: W. B. Depp, J. S. Bradley and A. B. Mayfield.

JERSEY CITY, N. J.—Articles of incorporation have been filed by the Pennsylvania Telephone Company, whose purpose it is to construct telephone and telegraph lines in Pennsylvania. The capital stock of the company is given at $50,000, divided into 500 shares of the par value of $100 each, and the principal office is at 243 Washington street, Jersey City, N. J. Among the incorporators are Leonard H. Kinnard, Harrisburg, Pa.; Addison Candor, Williamsport, Pa.; S. S. Moore, Elizabeth, N. J.

CALLICOON, N. Y.—The Western Sullivan Telephone Company has been incorporated with a capital stock of $25,000, and the following directors elected: Valentine Scheidell, Jeffersonville; Louis Bauornfiend, North Branch; F. S. Anderson, Callicoon.

DE RUYTER, N. Y.—Articles of incorporation have been filed by the Re Ruyter and Lincklaen Telephone Company, of De Ruyter, whose intention it is to build lines from De Ruyter to Lincklaen. The capital stock is placed at $1,500, and the following directors have been elected: U. E. Smith, L. C. Wells, W. W. Ames, of De Ruyter, and others.

BEAUFORT, N. C.—The Old North State Telephone and Telegraph Company, of Beaufort, N. C., has been incorporated with a capital stock of $125,000. D. P. Bible, J. W. Boon and others are the incorporators.

BELLEFONTAINE, O.—The Logan County Farmers' Telephone Company, with a capital stock of $5,000, has been incorporated.

PLEASANT CITY, O.—Articles of incorporation have been filed by the Pleasant City Farmers' Telephone Company. The capital stock is placed at $2,000, and J. H. Larrick and others are among the incorporators.

CEDARDALE, OKLA.—The Estella, Cedardale & Quinlin Telephone Company, of Cedardale, with a capital stock of $5,000, has filed articles of incorporation. The incorporators are Charles Johns and Milo Smith, of Driskoll, Charles Shepard, of Cedardale, and M. C. Kelley, of Estella.

LAWTON, OKLA.—The Farmers' Mutual Telephone Company has been incorporated with a capital stock of $5,000. Among the incorporators are W. G. Kennedy and P. R. Childer, of Tampa, and C. C. Naylor, of Lawton.

LONGDALE, OKLA.—Articles of incorporation have been filed by the Dane & Longdale Telephone Company, of Longdale. It has an authorized capital stock of $10,000, and the directors are A. M. Ardey, C. E. Peason and J. P. Sharp, all of Longdale.

McLOUD, OKLA.—The McLoud Telephone Company has filed articles of incorporation, placing its capital stock at $15,000. The directors of the company are: W. Scott Yates, B. D. Glass and G. D. Yates, all of McLoud.

POND CREEK, OKLA.—The Grant County Rural Telephone Company, with a capital stock of $20,000, has been incorporated, and the following directors eletted: W. H. Proctor, W. Vansickle, L. E. Thorn and E. E. McAlister, of Pond Creek.

SHATTUCK, OKLA.—The Farmers' Mutual Rural Telephone Company, with a capital stock of $1,500, has been incorporated. The incorporators are T. J. Eldridge, W. H. Holmes, L. L. Dunihoe, McHenry Smith, O. L. Edgker, S. M. Wallace and C. T. Taylor.

WICHITA FALLS, TEXAS.—Articles of incorporation have been filed by the Bowman and Lake Creek Telephone Company, of Wichita Falls. It has an authorized capital stock of $5,000, and the incorporators are J. L. McCobkey, J. T. S. Cant, J. R. Decker, Henry Ford, J. H. Campbell and H. F. Simmons.

RIPON, WIS.—An Independent telephone company, to be known as the Ripon Rural Telephone Company, is being organized at Ripon. Arrangements have already been made for exchange service with the Ripon Telephone Company.

VOROQUA, WIS.—The English Lake Telephone Company, town of Newton (postoffice address Viroqua, Wis.), has filed articles of incorporation. Its capital is given as $2,100 and Ernst Onsorge, Alex. J. Duvenek, Herman Voght and Carl Jacob are the incorporators.

FRANCHISES.

JERSEYVILLE, ILL.—The city council has granted the Jerseyville Telephone Company a twenty-five year franchise, this being an extension of the one formerly granted. It is the company's intention to make extensive improvements in its system.

WINFIELD, LA.—The Board of Aldermen has granted the Winn Parish Telephone Company a franchise to establish an exchange at this city.

MAHNOMAN, MINN.—A thirty-year franchise has been granted to L. G. and C. H. Sanders, to construct and operate a telephone system at Mahnoman.

FARGO, N. D.—The North Dakota Independent Telephone Company has been granted the franchise for which it applied some time ago.

HOPEWELL, OHIO.—The Farmers Mutual Telephone Company, of Fostoria, has been granted a franchise to construct and operate lines in Hopewell and Seneca.

OREGON CITY, ORE.—The Home Telephone Company has been granted a franchise to operate a telephone exchange in Oregon City.

SPRINGTOWN, TEXAS.—Permission has been granted to the Springtown Co-operative Telephone Company to erect and maintain a telephone system along the Springtown and Weatherford public road.

KANAB, UTAH.—The Garfield Telephone & Telegraph Company, which operates a line from Kanab to Marysville, has applied for a franchise at Richfield. It is the company's intention to construct a line from Marysville to Richfield, and later to connect with the Independent lines of Utah for long distance service.

FINANCIAL.

MOBILE, ALA.—The Home Telephone Company, of Mobile, has increased its common stock from $33,000 to $500,000 and its preferred from $2,000 to $150,000.

DONGOLA, MO.—The capital stock of the Dongola Home Telephone Company, Dongola, has been increased from $2,500 to $5,000.

ROCKFORD, MO.—The Ebenezer Telephone Company has increased its capital stock from $500 to $1,500.

WATERVILLE, N. Y.—A dividend of six per cent has been declared by the Waterville Telephone Company.

DAYTON, OHIO.—The Dayton Home Telephone Company is consider-

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WESTERN CEDAR POLES
AND MANUFACTURERS OF
RED FIR CROSS ARMS
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THE WEEK'S MESSAGES

ing the advisability of increasing its capital stock from $1,200,000 to $2,000,000.

AMHERST, WIS.—The capital stock of the Amherst Telephone Company has been increased from $2,500 to $6,000.

WAUSAU, WIS.—At a recent meeting of the Wausau Telephone Company a dividend of 10 per cent. was declared.

COMBINATIONS.

BELLEVUE, IOWA.—It is the intention of the Bellevue Telephone Company to take over the system known as the Dennison line running to and through Tete de Morts.

GRANTSBURG, WIS.—The Farmers' Independent Telephone Company has made arrangements to take over all the Tri-State rural lines south and east of Grantsburg.

ELECTIONS.

MATTHEWS, IND.—The Matthews Telephone Company has elected A. Q. McKinney, president; A. B. Couch, vice-president; M. Winsett, secretary and treasurer.

MT. ZION, IND.—The following officers and directors have been elected by the Mt. Zion Telephone Company: Dr. Morris, president; A. R. Williams, vice-president; Levi Huffman, treasurer; Frank Huffman, secretary; B. A. Williams, manager. Directors: A. R. Williams, Dr. Morris, Levi Huffman, B. A. Williams and Frank Huffman.

MEDIAPOLIS, IA.—At the annual meeting of the Mediapolis Mutual Telephone Company, the following officers were elected: President, Henry Breder; vice-president, Herman Walker; secretary, J. L. Jones; treasurer, D. J. Kelly; manager, Amos Bolick.

CHILLICOTHE, MO.—The following officers have been elected by the Chillicothé-Bedford Telephone Company: F. Reed, president; J. Winans, treasurer; John Manning, secretary.

OMAHA, NEB.—The following officers have been elected by the Independent Telephone Company: President, F. H. Stow; vice president, B. S. Baker; secretary and treasurer, W. F. Ely.

CORTLAND, N. Y.—The following officers have been elected by the Cortland Home Telephone Company: President, C. P. Walrad, of Cortland; vice-president, W. W. Nicholson, of Syracuse; secretary, S. C. Ormsbee, Syracuse; auditor, A. W. Deas, Syracuse; treasurer, G. J. Mager, of Cortland.

FARGO, N. D.—The North Dakota Independent Telephone Company has named H. R. Lyons, of Mandan, president; J. D. Brown, Hope, vice president; Robert Jones, Fargo, second vice president; E. J. Weiser, Fargo, treasurer, A. B. Cox, Valley City, secretary.

MARION, O.—The board of directors of the Marion County Telephone Company consists of W. G. Harding, D. R. Crissinger, J. F. Prendergast, H. B. Hane, C. H. Norris, J. A. Schroeter, F. F. Guthery, S. E. Barlow, F. A. Huber, O. Wellenweber, J. W. Scott, Geo. W. King and A. E. Cheney.

NORWALK, WIS.—The Norwalk Telephone Company has elected the following officers: President, Albert Grill; vice-president, F. Muhlenkamp; secretary, Fred Vieth; treasurer, Chas. Arndt. The directors of the company are J. B. Kerrigan, Joe Mack, Herman Flock, Thos. Sullivan and John Berendes.

MISCELLANEOUS.

CONCORDIA, KAN.—The Concordia Telephone Company has arranged for connections with the Farmers' Telephone Company in Lincoln township, Republic county.

HOLDREGE, NEB.—A controlling interest in the Phelps County Telephone Company at Holdrege has been acquired by B. F. Boorman, of Lexington, the consideration being in the neighborhood of $40,000. It is Mr. Boorman's intention to take an active part in the management of the company.

SHERIDAN, WIS.—The Sheridan Telephone exchange has been acquired by Mr. F. L. von Almen, of Appleton, who recently purchased the Citizens exchange at Waupaca. The service between Waupaca and Sheridan is to be greatly improved.

WAUPACA, WIS.—The Wolf River Telephone Company, which operates lines from Waupaca to Poysippi, has been purchased by Messrs. Frisbie & Sons, of Pine River.

PERSONAL.

E. F. LYONS was appointed superintendent of the Texarkana Telephone Company, Texarkana, Tex., on March 1. Mr. Lyons is a thorough telephone man, having worked through various departments of a prominent Bell telephone company, and comes highly recommended. He will have charge of the construction, maintenance and operating departments of the Texarkana Telephone Co.

New Construction in the Field

WALCOTT, ARK.—The improvements which are being made by the Walcott Telephone Company will include the construction of a line to Paragould.

EUREKA, ILL.—It is the intention of the Eureka Telephone Company to make many improvements in its system, which when completed will give it a thoroughly up-to-date plant.

ST. ANNE, ILL.—Extensions are to be made in the lines of the West St. Anne Telephone Company.

SALISBURY, ILL.—Lines have been built by the Salisbury Telephone Company to Pleasant Grove, and an exchange is to be installed at that place.

STENDAL, IND.—The Stendal Home Telephone Company contemplates the erection of a number of new lines.

DECORAH, IOWA.—A new switchboard is to be installed at Decorah by the Standard Telephone Company, which also expects to make many other improvements in the city. A number of new toll lines are also to be erected.

EMERSON, IOWA.—The Emerson Mutual Telephone Company, which now has connections with Hastings, Henderson, Wales, Climax, Glenwood, Pacific Junction, Essex and Imogene, has under consideration the construction of a line to Macedonia.

ZENDA, KAN.—Many improvements in its system are being made by the Zenda Telephone Company.

WINTHROP, MINN.—New lines to Transit and Bismarck are to be built by the People's Independent Telephone Company, which expects also to construct a number of rural lines.

CANTON, N. Y.—The Adirondack & Home Telephone Company is installing its system at Canton.

FREDONIA, N. Y.—Considerable new construction work in Fredonia is contemplated by the Fredonia Home Telephone Co.

KENTON, O.—Among the improvements planned by the Kenton Telephone Company is the installation of a new switchboard.

SANDUSKY, O.—The Sandusky Telephone Company is making many improvements in its system.

YOUNGSTOWN, O.—The United States Telephone Company is rebuilding its line from Youngstown to Steubenville. It also proposes to put in a number of new lines connecting with Salem and other points, giving the Youngstown Telephone Company's subscribers much better service.

CHESTER, S. C.—The system of the Chester Telephone Company is being put in first-class condition.

NASHVILLE, TENN.—It is quite probable that work will be commenced at once by the Home Telephone Company upon its local system in Nashville.

BROWNSVILLE, TEXAS.—It is the intention of the Brownsville Telephone Company to construct a line along the right of way of the St. Louis, Brownsville & Mexico Railway Company, from Brownsville to Fordyce and Robstown.

CALDWELL, TEXAS.—New lines are being constructed and many other improvements made in its system by the Trans-Texas Telephone Company at Caldwell.

UNDERGROUND.

EUREKA, ILL.—The wires of the Eureka Telephone Company are to be placed underground in Eureka.

LOUISVILLE, KY.—All telephone wires in the business districts of Louisville are to be placed underground.

FRANKLIN, LA.—An ordinance is being considered by the town council requiring all telephone wires to be placed in conduits.

WATERVILLE, MINN.—Considerable conduit work is being done by the Cannon Valley Telephone Company in Waterville, and wires are also to be placed underground in Le Sueur Centre.

OMAHA, NEB.—The Omaha Independent Telephone Company will in all probability place all of its wires underground in Omaha.

MANSFIELD, O.—The Mansfield Telephone Company, which is to spend $10,000 in improvements, expects to place all its wires underground in the business sections of Mansfield.

WHEELING, W. VA.—The Ohio Telephone Company is to place its wires in conduits in Wheeling, W. Va.

MILWAUKEE, WIS.—A considerable amount of underground work is to be conducted by the Milwaukee Independent Telephone Company.

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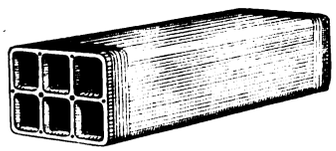

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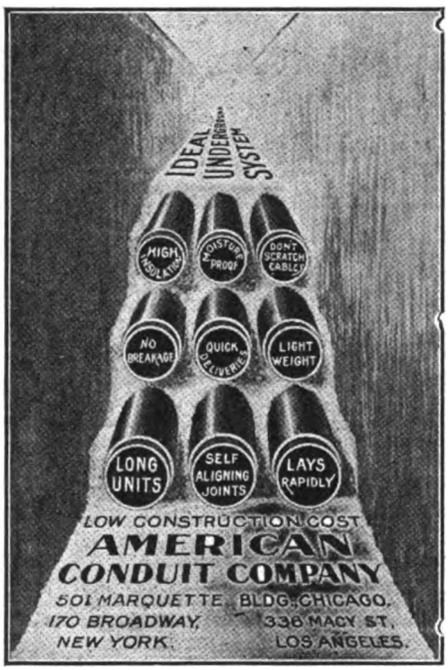

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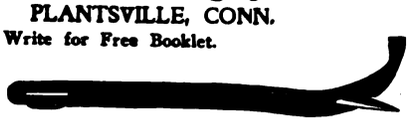

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WRITE FOR CATALOGUE
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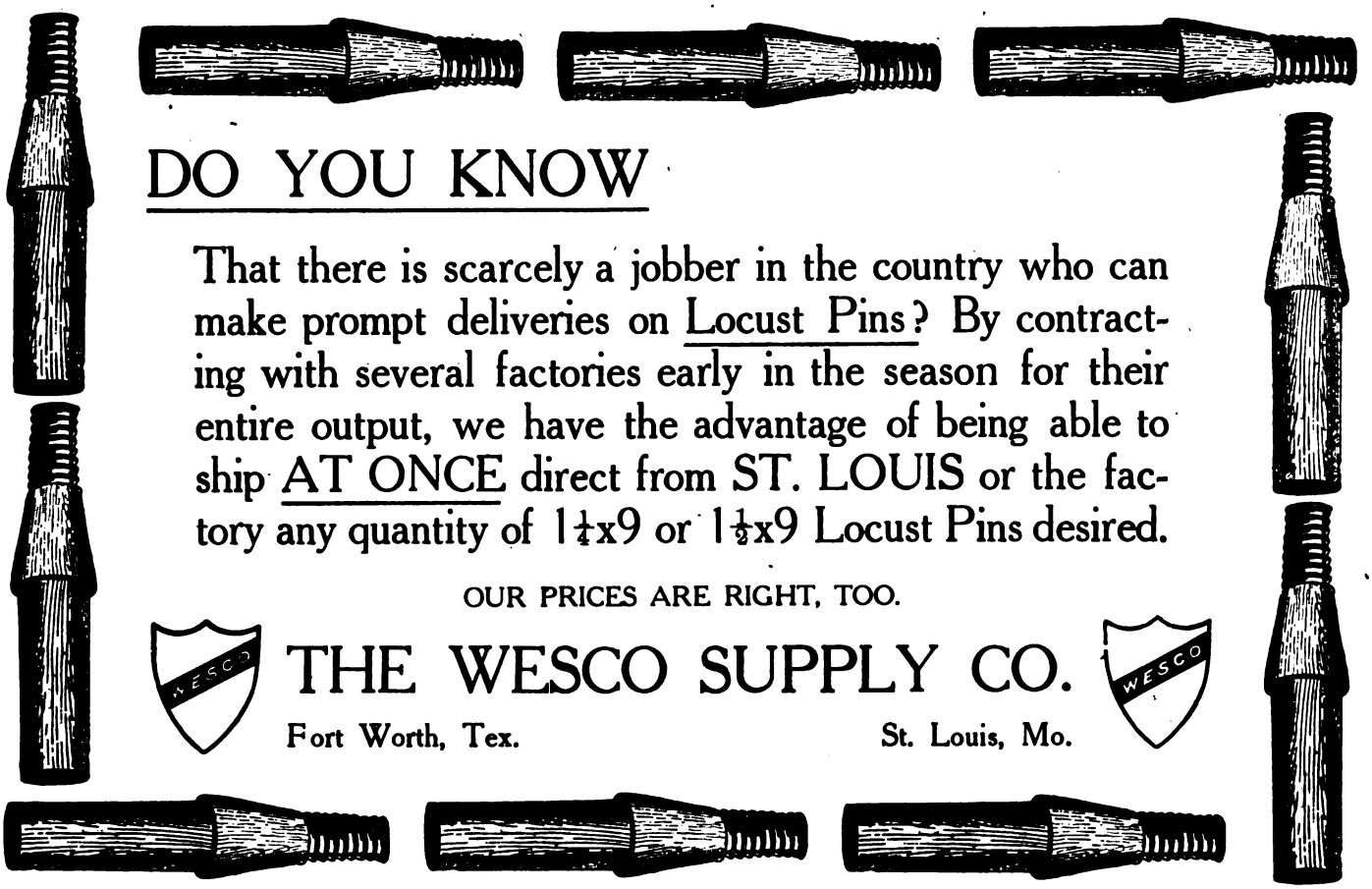

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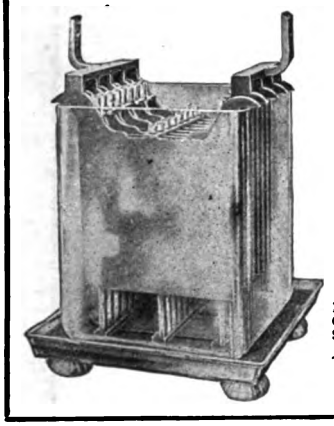

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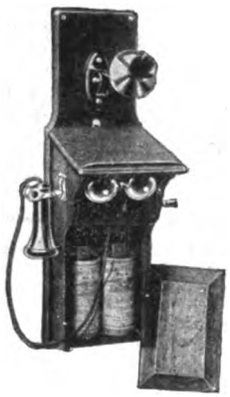

such equipment as will materially assist in accomplishing that end.

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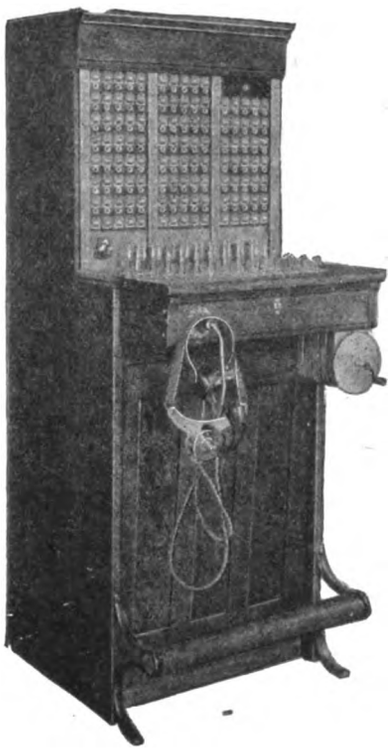

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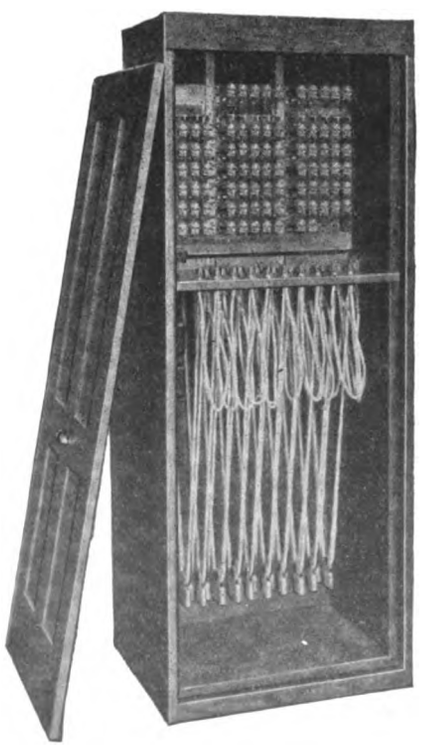

Rear view showing drops and cord equipment

Buy cabinet, mount drops and jacks as required

Plug restoring

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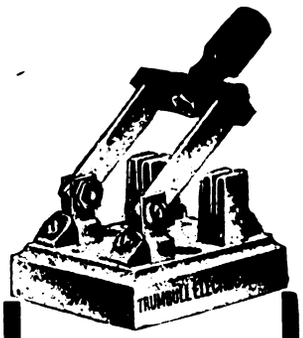

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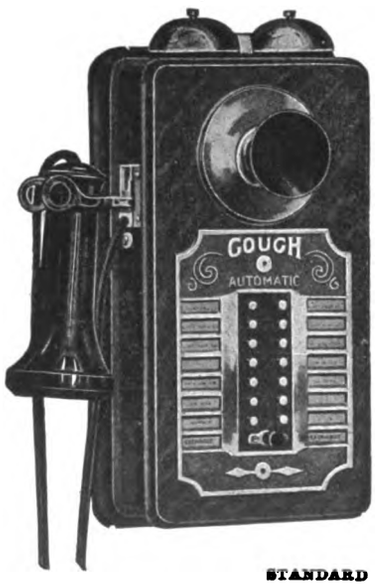

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24	"	"	1	"	"
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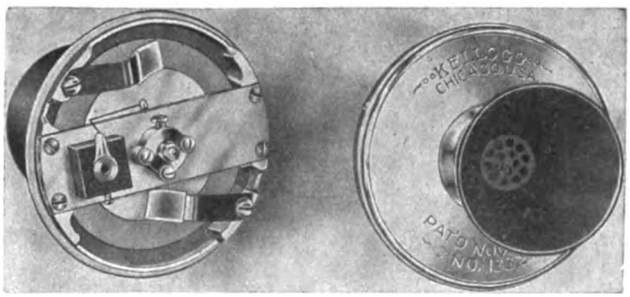
TELEPHONE APPARATUS

KELLOGG COMPACT DRY CELL TYPE TELEPHONES

CONTAIN THE KELLOGG TRANSMITTER



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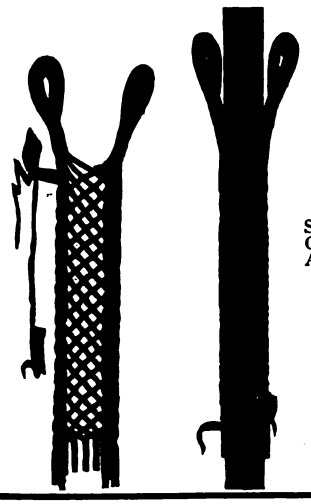
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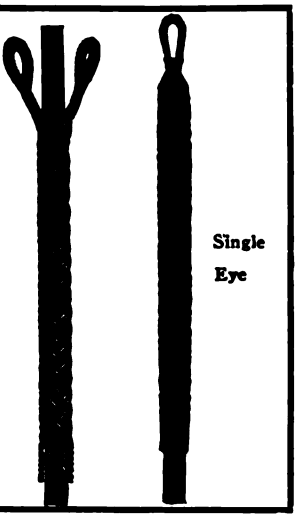
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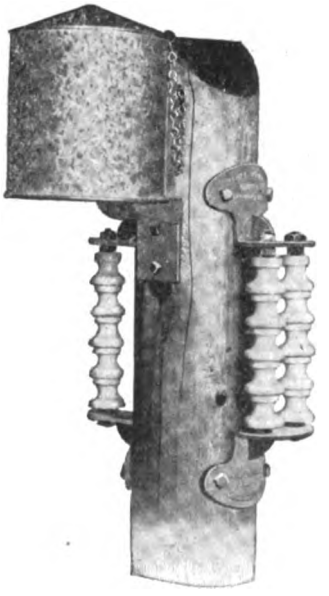

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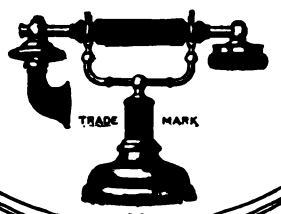

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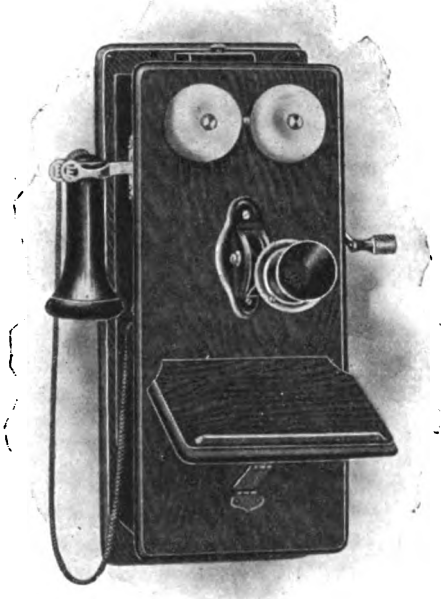

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Those who Know Telephones.

Small Size, Fine
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there's nothing more safe, more sure, more profitable—in the telephone business—than the securities of an Independent telephone company operating our AUTOMATIC TELEPHONE SYSTEM—

BECAUSE it gives more service, better service, prompter service, more accurate service than a manual system (and also an absolutely secret service, which no manual system can give) and

BECAUSE it costs less to operate, less to maintain, less to enlarge than a manual system, or

TO SUM IT ALL UP, the AUTOMATIC TELEPHONE SYSTEM produces a better telephone service, commanding a higher price, at less cost than inferior service can be produced for by a manual system.

THAT IS THE REASON WHY the AUTOMATIC TELEPHONE SYSTEM makes the securities of the company using it safe, stable and profitable, and why it has been adopted by the Independent telephone companies in the following cities:

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Dayton, Ohio.
Denver, Colo.
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Emaus, Pa.
Fall River, Mass.
Grand Rapids, Mich.
Hastings, Neb.
Havana, Cuba.
Hazleton, Pa.
Holland, Mich.
Hopkinsville, Ky.
Jonesboro, Ark.
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Lewiston, Me.
Lincoln, Neb.
Los Angeles, Cal.
Manchester, Iowa.
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Medford, Wis.
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Mt. Olive, Ill.
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Pentwater, Mich.
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Princeton, N. J.
Richmond, Ind.
Riverside, Cal.
Rochester, Pa.
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San Diego, Cal.
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South Bend, Ind.
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Springfield, Mo.
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Urbana, Illinois.
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AUTOMATIC ELECTRIC CO.

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LOOKING FOR TROUBLE?

Suppose you have a line in trouble—grounded or open. You don't know the exact location, but you send out a troubleman to hunt it up and clear it. It may take him an hour or a day. Meanwhile the subscriber is getting hot under the collar and saying things about telephones in general and yours in particular.

If you have a Pignolet voltmeter or volt-ammeter you can determine the approximate location and also get an idea of the nature of the trouble. With the information your troubleman can find the fault in jig time, and you will have prevented the subscriber kicking by giving him service at the earliest possible moment.

Does it pay to be informed? You ought to know.

LOUIS M. PIGNOLET, Originator of the Voltmeter Habit
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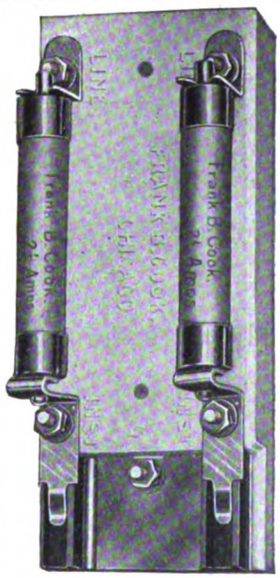
Accidents due to lightning or a crossing of telephone with high tension circuits can be positively eliminated with

COOK'S Subscribers' Station Protectors



It has recently been held that telephone companies are liable for damages to subscribers in such accidents. Don't take chances; install

COOK'S Subscribers' Station Protectors

Approved and Listed by the Underwriters' National Electric Association

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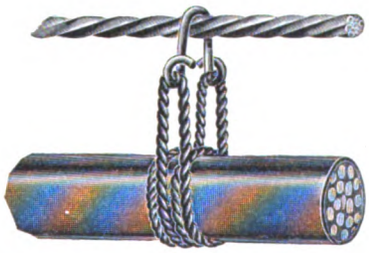
"National" Cable Hangers



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Hook will not straighten out.

Wires cannot be caught under the hook when being strung above the cable. We use the best grade of marline and houseline in the manufacture of our hangers. Write your jobber to-day for prices and samples.

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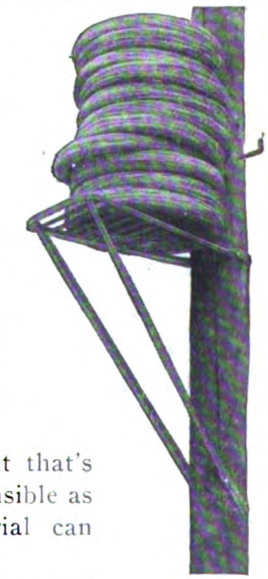
One Hundred Seats A Single Order . . .



Nothing extraordinary, this order from one telephone company for 100 pole seats—but interesting, because shipped the same day, and we're getting orders of this sort right along.

How can you surpass a seat that's just as good and sound and sensible as good men and honest material can make it?

Better let us have your order now and be ready for Spring construction.

That applies to all our other specialties bearing the "Security" brand.

Write and ask for our bulletins. You'll find the prices as **right** as the goods—and they're beyond betterment.

TOLEDO, OHIO · THE F. BISSELL COMPANY

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THE IRON WIRE BALLAST

APPLIED TO

OPERATORS' RINGING LEADS

¶ **LAMP INCANDESCENT RESISTANCE IS WASTEFUL.** The resistance of the carbon filament under normal ringing conditions is 700 Ohms, and the drop in voltage across this resistance is an absolute and unnecessary waste. When ringing on a short circuited line, the resistance of the carbon filament drops to 400 Ohms and will, of course, protect the voltage of the other operators. The action is the reverse of what is needed, as the high resistance **appears when it is not needed.** Only a normal resistance appears when protection is desired. The temperature co-efficient is negative in action.

¶ **PROTECTOR RELAYS ARE UNRELIABLE.** They are marginal in action, and cannot be relied upon when needed. Even if the relay does operate, the contact is liable to fail and cause a loss of voltage under normal conditions.

¶ **THE V-B IRON WIRE BALLAST IS BOTH ECONOMICAL AND POSITIVE.** With a ballast there is no possibility of failure in action, as the qualities of the filament cannot change. The action is as instantaneous as a carbon lamp and the temperature co-efficient is positive. Under normal ringing conditions the resistance of the ballast is 25 Ohms. When ringing upon a short circuited line the resistance of the ballast is 400 Ohms.

¶ **THE VOTE-BERGER COMPANY, La Crosse, Wisconsin, sole owners of the V-B Iron Wire Ballast Patents, are now prepared to make immediate deliveries on ballasts equipped with Edison bases for operators' ringing leads.**

¶ **A line from you, addressed to Department C, THE VOTE-BERGER COMPANY, La Crosse, Wisconsin, will bring you complete and interesting information regarding this and other applications of the iron wire ballast.**

¶ **If you contemplate purchasing a common battery switchboard, do not delay sending in your plans or specifications. Sales engineers of THE VOTE-BERGER COMPANY will call upon you if you so desire.**

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Your own fault if you don't.

Drop us a card and we will mail you our "to the minute" net price list of Pole Line LUMBER-HARDWARE and WIRES. It is issued for your use. Get all that is coming to you.

Commercial Electrical Supply Co.

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REASONS WHY

YOU SHOULD INSTALL

THE CALCULAGRAPH

No. 11

(See "Reasons Why" No. 12 next week)

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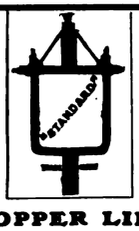

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VOLUME XV. SATURDAY, MARCH 30, 1907. NUMBER 13

Iowa's Great Convention

By John W. Carey.

THE men who have carried the development of rural telephony farther than anywhere else in the world—who have built up efficient local service in hundreds of cities and towns and are now knitting their plants into a comprehensive whole by a system which provides for a fair interchange of connections and a just division of profits have just met in the greatest State convention ever held by telephone men. Boosting, carefully planned and long continued by a group of efficient and enthusiastic officers and hearty co-operation by members showed their value when, on the first day, March 19th, nearly four hundred delegates gathered at Sioux City to tell of progress in the past and plan for greater extensions in the future. Before the close of the convention many more came. Each man wore a card bearing a number, so that his name could be learned by looking at the register.

P. C. Holdoegel, Rockwell City, Ia., opened the convention with an address which showed the almost total failure of the extraordinarily active campaign of the Bell company during the past year. Soliciting for sub-license contracts and for subscribers, hundreds of whom have been offered free service, which is paid for in places where there is no competition, have failed to dampen the enthusiasm or impede the progress of the Independents. The ratio of Bell to Independent telephones in the State is now 1 to 7.

Group of Delegates to the Iowa Convention. Sitting in Front Are Jas. B. Hoge, P. C. Holdoegel and George T. Hewes. H. S. Baker, Chairman of the Entertainment Committee, Stands in the Right Foreground.

Mr. Holdoegel stated that the new constitution which the association adopted last year has worked very successfully. Under it there are now five districts in the State, each one of which has a president, who, by virtue of his office, is a vice-president of the association. Working under him is a captain in every county in his district. These captains are the men on the ground who combat the efforts of the Bell company.

Mr. Holdoegel urged a still closer and more complete district organization, that a more solid front may be presented to the opposition. The work of the field agents in localities where competition has been particularly vigorous was warmly commended.

F. McNally, of Carroll, Ia., read a paper on the topic, "Is It Advisable to Appoint a State Toll Line Inspector?" W J. Stanton, of Waterloo, advocated "The Standardization of Toll Line Companies."

The evening of the first day was given over to the exhibitors, of whom forty had fine displays on the second and third floors of the Hotel Garretson. The agents for the manufacturing companies expatiated upon the merits of all kinds of telephone appliances. All of the larger companies that make telephones and telephone appliances sent men to the convention. These representatives made the Garretson rotunda a vast billboard, upon which were lined hundreds of catchy signs. The manufacturing agents gave the delegates the best of treatment, and were unanimously voted to be good fellows and worthy of hearty support.

The ball was started rolling on Wednesday by Mayor W. G. Sears, of Sioux City, who expressed his hearty appreciation of the work being done by the Independent telephone men. He said the convention was one of the best ever held in Sioux City. He was impressed with the earnestness and intelligence with which the delegates had discussed their mutual problems. He complimented the "Independents" upon their fight against the

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telephone trust, and spoke in particular of the Sioux City Telephone Company, saying that Sioux City felt a great pride in it.

A large part of the forenoon session was devoted to greetings from representatives from various states. E. H. Hart, of Fargo, N. D., delivered the greeting of his State to the Iowa Independent Telephone Association. R. E. Mattison, of Lincoln, Neb., secretary of the State Association and manager of the Telephone Traffic Association of Nebraska, delivered greetings from Bryan's commonwealth. Judge C. B. Kennedy, of Canton, S. D., president of the Independent Telephone Association of South Dakota, was to have represented his State in the list of greetings, but arrived too late to carry out his part of the programme in the morning, but he did his duty nobly in the afternoon. E. H. Moulton, of Minneapolis, who was to have spoken for Minnesota, failed to appear. C. A. Hollis, of Hudson, Ia., agent for the Independent Telephone Association, spoke of the work that he has been doing in an effort to improve toll line service.

On Wednesday the afternoon was devoted to the consideration of problems of interest to farmers' and mutual companies.

The big feature of the Wednesday meeting was the paper of J. B. Hoge, of Cleveland, O., president of the International Independent Telephone Association.

On Wednesday morning the association voted for the appointment of a committee to investigate the advisability of forming a uniform toll rate in Iowa. Harold Beyer, of Grinnell, Ia., chairman of a committee which, in secret session the previous night, discussed the rate question for three hours, submitted a resolution, calling for the appointment of a committee of five to make an investigation, and that it be given power to make or change the existing rates. E. E. England and C. A. Hollis were the other two members of the committee. The traffic arrangements committee of the independent clearing house at Des Moines had consulted with this committee.

J. S. Bellamy, of Knoxville, vigorously opposed the resolution. He said that in his town the Bell people had made a cut, and that he did not think it fair that a rate schedule should prevent him from meeting this competition.

P. C. Holdoegel, Re-elected President of the Iowa Independent Telephone Association.

James B. Hoge, president of the International Association, spoke on this question as follows:

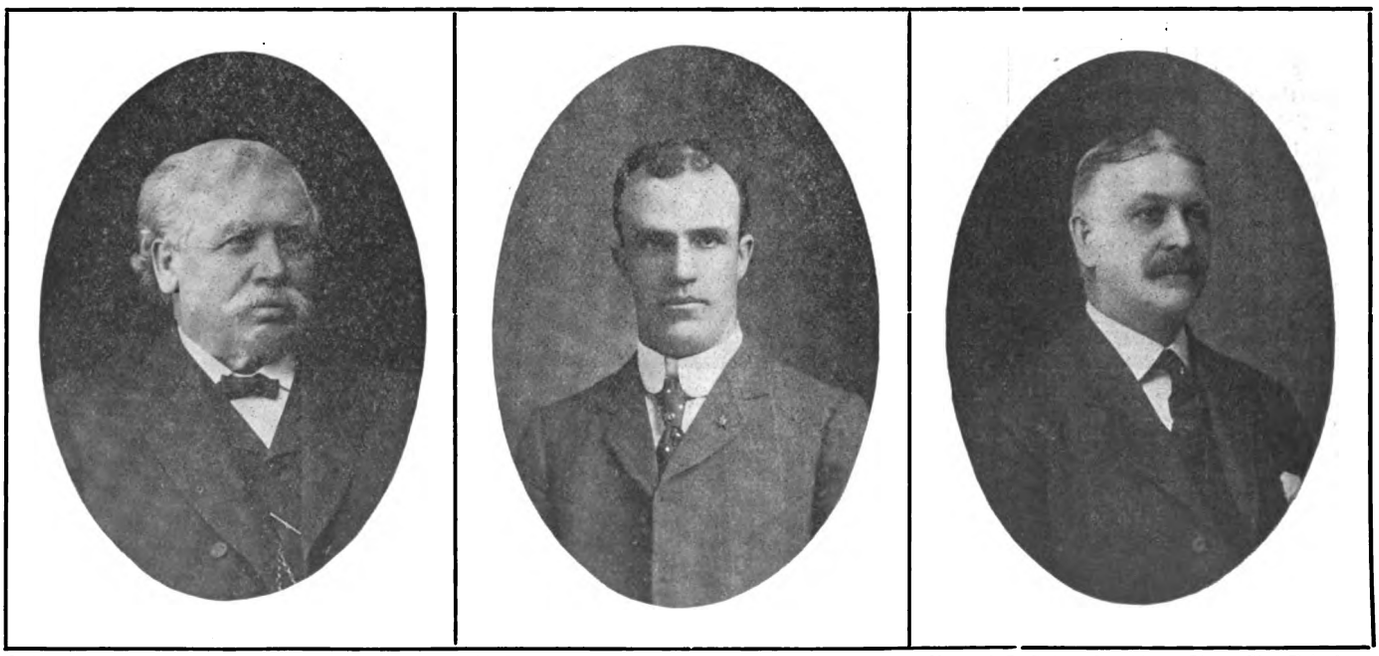
"I think, gentlemen," he said, "that you will find that the more cutting business you do, the worse off you will be. I would advise you to stick to the average of six-tenths of a cent per mile, which I think is as low as you can charge with profit. Ten cents is usually the minimum charge for any service, and I would not go below that."

President Holdoegel explained that the convention was not attempting to fix a uniform rate at this time, but was merely trying to find out if there is a demand for a uniform rate in Iowa.

Upon calling for the vote the resolution was adopted unanimously. Mr. Holdoegel will appoint five members, who will look over the field within the next thirty days.

Howard S. Baker, president of the Sioux City Telephone Company, was in charge of the arrangements for the convention and is the recipient of numerous congratulations upon the success of the meetings. Good entertainment was provided for the city's guests. Many of the delegates found sights of interest at the stockyards and the packing house, which make up one of Sioux City's principal industries.

On Wednesday evening a fine vaudeville entertainment was presented at the Lyric Theatre. E. H. Martin president of the E. H. Martin Telephone Company, Webster City, gave a make-up sketch, which showed his versatility and delighted all his hearers. Mr. Martin, who is one of the best-known telephone men in Iowa, has long been prominent in association affairs. Eleven years ago he issued a call to telephone men which resulted in so large an attendance that the Iowa Telephone Association was formed, and he was elected president in honor of his activities. Since that time he has taken a leading part in promoting the cause of Independent telephony in his State. At the banquet on Thursday evening "Happy Cal" Caldwell was toastmaster, which is another way of saying that it was a great success.



Judge C. B. Kennedy, Who Brought Greetings from the South Dakota Association, of Which He Is President.

C. C. Deering, Re-elected Secretary of the Iowa Association.

Howard S. Baker, President, Sioux City Telephone Company.

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By unanimous vote P. C. Holdoegel, of Rockwell City, Ia., on Thursday, the closing day of the eleventh annual convention of the Iowa Independent Telephone Association, was elected to succeed himself as president of the association. This action breaks a precedent which has been an unwritten law of the organization for ten years. It had been customary to give each president but one term, upon the theory that the honor should be passed around. Mr. Holdoegel's record during the past year in office and his personal popularity united to bring about the request that he accept the office a second term. Mr. Holdoegel agreed to do so. During the first two days of the convention he discouraged the nomination, but when the unanimity among the delegates became apparent he yielded. In placing the name of Mr. Holdoegel before the convention James H. Shoemaker, of Waterloo, representing the Northwestern District, drew a comparison between the position that President Roosevelt is in and the status of the president of the association. "The American people," he said, "may find it necessary to overrule the wish of their executive, and this afternoon I think that this convention will overrule precedent and the wish of President Holdoegel and name him for a second term."

E. E. England.

Charles C. Deering, of Boone, Ia., was re-elected secretary and treasurer. He has held the office for eight years. The executive committee is composed of J. S. Bellamy, Knoxville; J. C. Thorne, Fairfield; E. H. Martin, Webster City; George M. Bandy, Des Moines.

The re-election of these men, composing the entire board of officers during the past year, is without precedent in the history of the association. This has been the most progressive year since the association was organized, and credit for the success is freely given to the officers who have been so active in promoting the common cause.

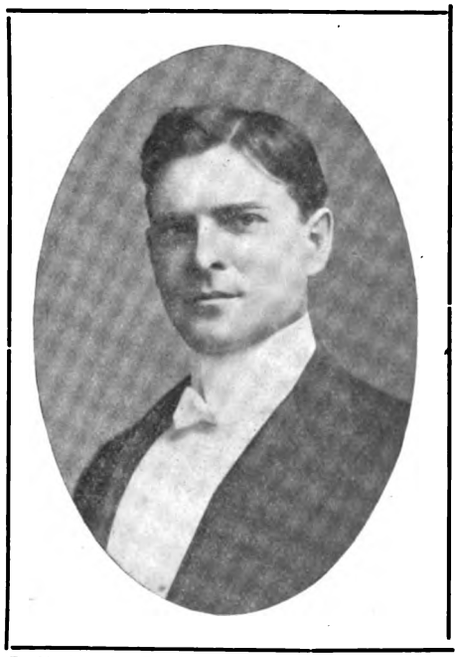
C. H. Smith, Secretary, the New State Telephone Company, Sioux City, Ia.

The vice-presidents named were: First vice-president, E. E. England, Mt. Pleasant Ia.; second vice-president, O. A. Repass, Dallas Center, Ia.; third vice-president C. A. Peterson, Manchester, Ia.; fourth vice-president, H. A. Kinney, Woodbine, Ia.; fifth vice-president, J. E. Green, Brighton, Ia. Cedar Rapids was named without contest as the 1908 convention city. During the first two days of the convention there was a Des Moines boom, which by the last day had faded away into nothingness, the hustling Cedar Rapids delegates having brought around to their way of thinking such a large majority of the delegates as to discourage the Des Moines delegates from making any fight on the convention floor.

Resolutions were adopted complimenting Howard S. Baker, president of the Sioux City Telephone Company and chairman of the entertainment committee, and C. H. Smith, secretary of the New State Telephone Company and chairman of the programme committee, upon the success of the convention, which was unanimously voted to be one of the most successful sessions in the history of the organization. Papers were read Thursday by E. E. England, Mt. Pleasant, Ia., on "Independent Long Distance," and Roy A. Walker, Des Moines, on "Hints on the Management of Traffic."

The paper by George T. Hewes, of Des Moines, manager of the Clearing House, afforded a means of judging the work which has, during the past year, been conducted by himself and his associates with such signal ability. The members of the association found many things in his report which, based as they are on a careful and thorough study of toll line operation, will aid them to more fully understand the necessity of devoting careful attention to this all-important subject. The re-election of the entire board of Clearing House officers, without change, was a fitting testimonial to the excellent work they have done in building up this business. The convention was brought to a close Thursday evening by a big banquet at which "Happy Cal" Caldwell, former mayor of Sioux City, was toastmaster.

The menu was arranged to tickle the fancy, as well as the palates of the telephone men, some of the novel items being "cable compound" (green turtle soup), "porcelain knobs" (olives), "automatic iron girls stuffed with phantom circuits" (guess what!). "Dividends" (fancy cakes) were prominent at the banquet, as at the homes of the members. After President Holdoegel had formally thanked Howard S. Baker, president of the Sioux City Telephone Company, for his hospitality, Charles A. Dickson, of Sioux City, spoke on the development attained in his city and the surrounding territory. Among other things Mr. Dickson said, "There is nothing like good, clean competition to bring out substantial results in business of any kind, and the example furnished us by the operation of two telephone companies in this city cannot be equalled. Each company now has upon its books many more subscribers than the Bell company had when we started in business." James H. Shoemaker and J. V. Sammis spoke on topics in a way that made decided hits. J. J. Nate drew on a wealth of good stories accumulated during his long career as a salesman of telephone supplies. G. M. Evanson, of the St. Peter and Nicollet exchange, Minnesota, told an amusing dream at the toastmaster's expense, and complimented the Iowa men on their telephone methods. Judge C. B. Kennedy, Canton, S. D., paid a fine tribute to the telephone girl. Other speeches full of humor or good solid wisdom were made by L. E. Hurtz, Lincoln, Neb.; P. C. Cockerill, and C. H. Smith. The members of the association went home with the feeling that the coming year will bring results which will keep Iowa well in front of the line of successful Independent States.



E. H. Martin, President, E. H. Martin Telephone Company, Webster City.

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The Progress of the Iowa Clearing House

By George T. Hewes.

THE Independent Telephone Clearing House records its first annual statement of work actually performed, and its managers are no longer entirely in the dark regarding the advantages of the institution to the Independent telephone cause of Iowa, to the public and to the financial interests of all telephone companies associated with its progress. The first two months, January and February, 1906, were occupied in preparing those companies which were under contract at that time with full details regarding the system of accounting, securing from them information regarding their lines, stations and exchanges.

The first month's business cleared was for the month of March, since which time there has been a gradual increase, as follows:

Amount of business cleared: April over March, 246% increase; May over March, 316% increase; June over March, 352% increase; July over March, 475% increase; August over March, 496% increase; September over March, 555% increase; October over March, 644%.

This gradual increase in the gross amount of toll business cleared is very gratifying and when it is understood that there are 13 companies which have signed contracts for Clearing House service who have not as yet made a report to the office, it will be evident that during the immediate future the percentage of increase each month will continue in a larger ratio than in the past.

From the time of the first month's clearance up to the completion of the prorating of October business the number of employes has not been increased, as the managers have borne in mind the desirability of securing the greatest efficiency at a minimum cost. The point has now been reached where it will be more economical to increase the number of employes and thus shorten the time consumed in completing reports to the several companies of their balances. This will reduce the cost to each company.

As a matter of general information, a report of this character is most easily grasped and understood when the results obtained are recorded in percentages. The actual figures representing clearing house transactions are incorporated in the manager's report to the stockholders of the clearing house.

Forty-three companies have now signed contracts with the clearing house (ten recently). Thirty-three companies have reported details concerning their several systems as follows:

767,549.—Population of the cities and towns whose exchanges and toll stations are reached directly by lines of the Clearing House, not including population within the limits owned by the New State Telephone Company.

135,685 Independent Telephones, including Rural Telephones controlled by members of the Clearing House (not including the telephones owned by the New State Telephone Company).

25,865 Bell Telephones in this same territory covered by Clearing House lines.

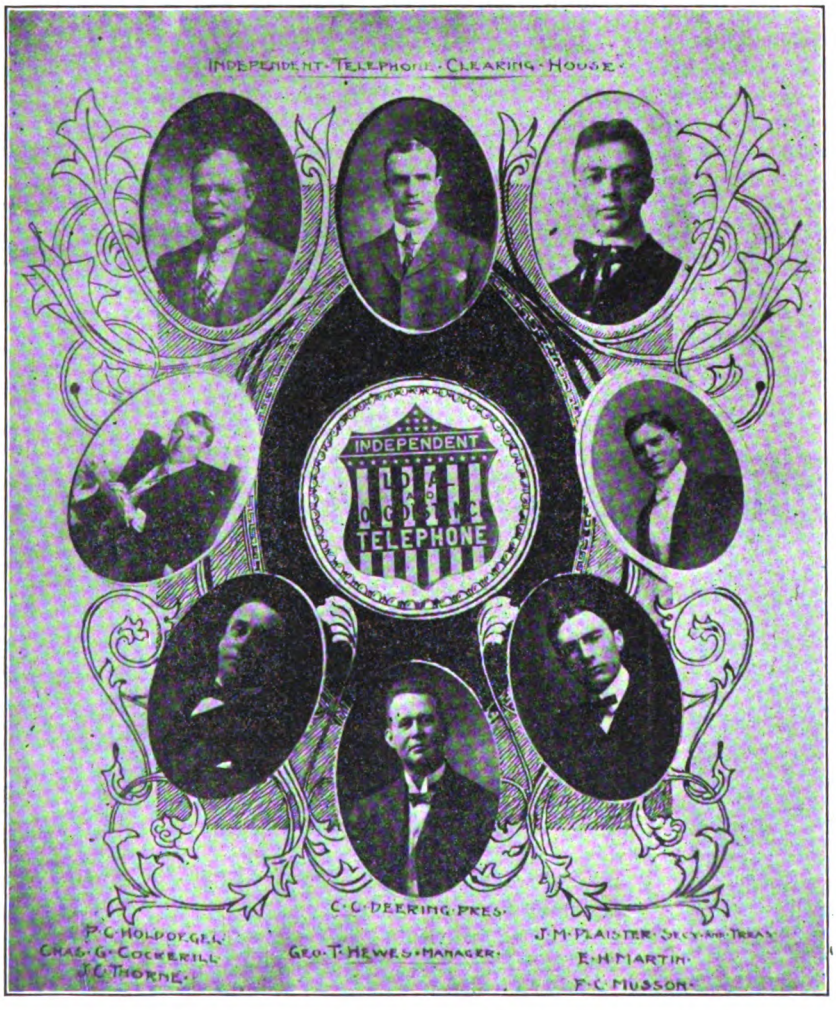
The following number of miles of wire (air line distance) are shown on Clearing House Map No. 9:

Copper, 3,300; iron metallic, 8,862; grounded, 1,796. Total, 13,958.

On account of the circuitous routes between stations the actual number of miles of wire is far in excess of these figures. A line of thought outlined some time ago before many of the members of the Iowa Association may be here repeated as follows:

"An analysis of the toll records of several companies and the determination of the earnings per unit of population has enabled the manager of the Clearing House to determine the extent to which expenditures for the building up of the toll line system can be safely made. The general average of earnings per caput in all of the companies has increased in the last ten years from twenty to fifty cents. In 1903 the lowest average per caput in any company was twenty-four cents, and the highest about one dollar. Except in territories showing the very lowest average, we should not hesitate to make fifty cents per caput the basis for extensions to new points, and for the territory of all companies which show average earnings above the general average we should apply the general average of their particular territory. Experience has shown them that in order to meet the depreciation and maintenance charges in toll lines the gross receipts should amount to at least twenty per cent of the toll line cost. They do not hesitate to recommend the construction of extensions to a toll line system whenever the prospective earnings will amount to twenty per cent of the estimated cost of the extension.

"As an example, consider two towns, each with a population of 10,000, and located twenty miles distant from each other. The cost of the line to connect these towns will be say, $4,000. The anticipated earning per caput is forty cents, this gives a



Officers of the Iowa Independent Telephone Clearing House, Who Have All Been Re-elected for the Coming Year.

*Annual report of the Clearing House, made to the members of the Iowa Independent Telephone Association.

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gross earning of $800, or twenty per cent of the cost of the line. If these towns were forty miles apart, instead of twenty miles, and the cost $8,000 instead of $4,000, the gross earnings would be only ten per cent of the cost. Such a line might clearly be a bad investment unless the toll line company could rent pin space to farmers' companies at a price which would not only encourage the farmer, but furnish additional telephone subscribers who would increase toll earnings.

"The toll earnings per unit of population should be made the factor in determining the advisability of the construction or extension of toll lines as well as the basis for all computation regarding the toll earning capacity in any locality instead of the amount of earnings per subscriber, for the reason that the percentage of subscribers to population is such a variable quantity.

"The following is a statement of toll conditions in exchanges of a certain company:

"Number of public stations, 57; number of subscribers, 7,440; population, 142,668; outgoing toll receipts, 1 year, $114,060.85; average receipts per caput, $.801. Statement of toll conditions with public stations only—Number of public stations, 27; population, 6,998; outgoing toll receipts, 1 year, $4,005.10; average receipts per caput, $.572.

"Data secured from records in the Clearing House. Agricultural districts—comprehending small towns: Number of public stations, 19; population, 9,349; telephones, exchanges, 1,671; rural, 1,039; total, 2,710; outgoing toll receipts, 1 year, $4,530; average receipts per caput, $.49. Commercial districts—comprehending principal exchanges having competition: Number of public stations, 10; population, 19,925; telephones, exchanges, 2,308; rural, 1,095; total, 3,403; outgoing toll receipts, 1 year, $5,630.40; average receipts of the telephone company in this territory per caput, $.28.

George T. Hewes, Manager of the Clearing House.

"Wherever the amount of toll earnings per subscriber is unusually large, a low percentage development in subscribers is generally found. It is, therefore, very misleading to quote the toll earnings per subscriber as an indication of the development of an exchange. The larger the subscriber development, the larger will be the toll earnings per unit of population, but the smaller per subscriber. It is therefore, believed that the only reliable basis for calculation of earnings upon the toll line investment is the anticipated amount of earnings per caput, i. e., per unit of population. The average toll earnings of any half dozen places in a given territory where the local conditions are the same, rural or commercial, will show approximately the average of the whole territory. Low earnings per caput may indicate any one or all of many unfavorable conditions, among which are lack of toll facilities, poor service, competing toll lines, competing exchanges, etc. The amount of earnings on toll line investment is dependent upon all of these contingencies—added to which are the ratio of mileage of toll line to population and the number of circuits per mile of line.

"It is found, as a general rule, in a territory where cities and towns are situated far apart the receipts per caput are large when compared with a territory where the cities and towns are near together. It is found that the earnings per mile of circuit are greater where cities and towns are near together."

What do these figures signify? They show that the Independents in Iowa have the population, the exchanges and only lack the facilities, to control the toll line long distance business which originates and terminates in Iowa.

It is now up to the Independent telephone men to say whether

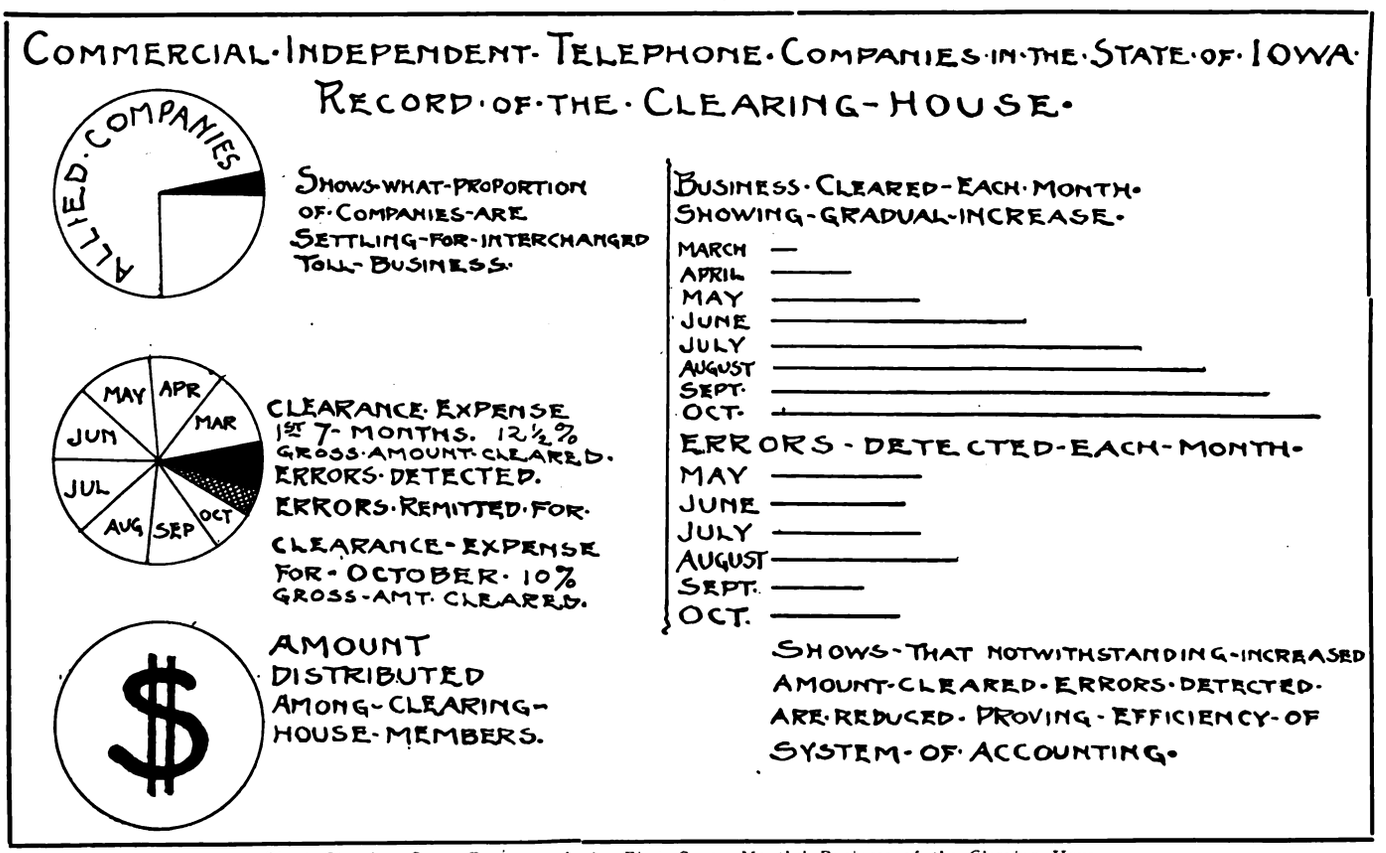

Chart Showing Some Features of the First Seven Months' Business of the Clearing House

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this volume of business shall be neglected. As before mentioned, a population now within the Clearing House lines of over 767,549, if computed on a basis of 25 cents per caput, means $191,887 per annum, aside from the preservation of present exchange investments, and the recent voluntary cut on long distance toll rates within the first 100 miles indicates that the other telephone company concedes that we have what we claim.

Aesop, in one of his fables, writes of the dog and the shadow. A dog ran along the road with a large piece of meat in his mouth. At last he came to a bridge, and he paused near one side to take a peep at the brook; he saw his shadow, and took it for a live dog. "Ha!" said he, "that dog has a piece of meat twice as large as mine, and I must have it."

But as he snatched at the meat, he saw in the stream, he dropped that which he had in his mouth, and it sank out of reach. He thus lost both; that which he saw in the brook, and his own, which the stream swept far out of sight.

Heretofore, Independents have apparently feared some such danger as this illustrates, and have been disposed not to build toll lines any great distance, as they prefer to exercise jurisdiction over the money collected for tolls, and have even gone so far as to refuse to allow talks and reverse the charges when the call terminated beyond their lines. Now, through the medium of the Clearing House they are just as safe in reversing charges on Clearing House stations as though they had the cash for the call.

The system of cross checking used by the Clearing House possesses several advantages, the most important of which is that it results in a discipline which produces accurate record of all calls on the part of all operators. The fact that errors are discovered quickly and brought home to the operator tends to make them careful. A second advantage is that the error is also brought to the notice of the originating subscriber so quickly that there is little trouble in making collections. All toll accounts are kept up to date and toll bills can be made out promptly. There is no question in the writer's mind but that on a large percentage of their toll bills (especially interchanged business) managers would be willing to discount 15 per cent and even twenty per cent to have them settled, particularly when they are two or three months old after the conversation took place.

In the purchase of standard forms of accounting, the Clearing House is enabled to effect a very material saving to members, purchasing toll tickets in quantities of three million tickets in one order. The prices at which the summary form and check ledger form are secured show a saving to Clearing House companies of at least fifty per cent on their stationery over the prices for small quantities which a single company must pay.

The Clearing House is the institution which not only settles but collects all balances between Clearing House companies and the Traffic Commitee, consisting of C. C. Deering, president; P. C. Holdoegel, vice-president; J. M. Plaister, secretary and treasurer; C. G. Cockerill and E. H. Martin, have recently instructed that all business sent to the Clearing House to be prorated, represented in the Clearing House by toll tickets, shall be prorated beginning with January business. This means that business originating at foreign stations (non-Clearing House stations) going over Clearing House lines shall be prorated. The Clearing House company which switches these messages onto Clearing House lines shall be responsible for the toll charges to other Clearing House companies.

The assessment for clearing and collecting and distributing proceeds for the first seven months was 12½% of the gross amount cleared and the expense for handling October business was 10%. The errors detected were five and three-tenths per cent of the gross amount cleared, of which the managers collected and remitted to the several companies 35% of the errors detected. The 65% of errors detected which was not collected is explained as follows:

Errors in routing by the Clearing House.
Messenger fees not reported by sending station to receiving station.
Failed calls where no talks took place, although the "OUT" ticket may have been marked failed and the "IN" O. K.
Deadhead calls not authorized by Clearing House pass.
Reversed calls not so reported to receiving station.

65% errors detected but not collected for.
35% collected for and remitted.

100%

Telephone Legislation in 1907

A Brief Digest of a Number of Important Acts Which, if Passed, Will Affect Telephone Interests.

THE Legislatures of many States and the Government at Washington have given and are now giving consideration to a great variety of telephone measures. Some of the bills which have been introduced have, of course, been already killed in committee, and action on others is now being considered. In many of the Legislatures, as was to be expected, a number of bills having the same tendency were introduced by different persons. The following summary is intended to give an idea of the important features of nearly all the bills which have been introduced during the present term.

NATIONAL HOUSE OF REPRESENTATIVES.

HOUSE BILL No. 25,708, introduced by Mr. Garber, Feb. 18, 1907, and referred to the Committee on Post Office and Post Roads, provides that if any person shall use an interstate telephone line for the purpose of selling or advertising for sale fraudulent mining stock he shall be guilty of a misdemeanor and liable to punishment by fine or imprisonment.

ARKANSAS.

SENATE BILL No. 138, introduced by Senator DeRossitt, provides that the rate of charges for residence telephones shall not exceed $1.50 per month, while charges for business houses shall not exceed $2.50 per month, with the provision that the bill shall not apply to local exchanges where less than 150 telephones are in use.

CALIFORNIA.

ASSEMBLY BILL No. 492, introduced by Mr. Stanton, Jan. 25, 1907, and referred to Committee on Municipal Corporations, is an act to authorize municipal ownership and operation of telephone systems along with other public utilities which are mentioned.

SENATE BILL No. 558, introduced by Senator Wright, Feb. 1, 1907, and referred to Committee on Judiciary, is an act intended to govern the granting of rights of way over public lands of the State of California for ditches, tunnels and telephone lines which may hereafter be constructed by the authority of the United States for the reclamation of arid lands.

SENATE BILL No. 463, introduced by Senator Carter, Jan. 28, 1907, and referred to Committee on Judiciary, is an act authorizing any incorporated city or town or municipal corporation to own, control and operate a telephone system or other public utilities.

COLORADO.

SENATE BILL No. 283, introduced by Senator Parks, is a bill which provides that telephone companies shall have the right to construct and maintain their lines along the highways and railway rights of way; also that permanent rights of way may be obtained over all public lands upon payment of proper compensation, and compliance with conditions as required by the State Board of Land Commissioners. Other provisions are that a company shall have the power to contract with any person or corporation for rights of way, and shall be entitled to the right of way over the lands and property of any corporations upon making just compensation, and companies vested with the power of eminent domain in order to facilitate the construction of their lines under provisions of the act.

SENATE BILL No. 282, introduced by Senator Parks, is an act to amend the act known as Chapter 125 of the Session Laws of the year 1905, and relates to the granting of franchises. Under the terms of this new bill it is provided that in the event that any Board of Trustees of a town or City Council of a city of the first or second class shall in granting a franchise fail to grant it in the form provided by Chapter 125 of the laws of the year 1905, as above referred to, any taxpayer in the town or city may at any time within thirty days file in the district court a bill in equity seeking for the cancellation of this franchise, and for the issuance of an injunction restraining the grantee from proceeding in the construction of any

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plant, and that the courts shall have jurisdiction to entertain such a bill and proceed thereon.

HOUSE BILL No. 428, introduced by Mr. Kelly, provides that telephone lines constructed over the line of any steam railway shall be placed on good substantial poles of a size not less than 12 inches in diameter at the bottom and not less than 6 inches at the top, set in earth not less than one-sixth of their length, well tamped, and that double cross-arms shall be used in all cases, with all wires insulated and securely fastened to both cross-arms. Steel pins shall be used in all fastenings, and the cross-arms shall be securely braced; crossing poles shall be set in a straight line with others on either side, and in such a manner that wires shall cross the railroad tracks at a right angle. All crossing poles shall be securely guyed and braced wherever there is a considerable strain, and no span of wires shall exceed 100 feet in length, if possible to keep it within this limit. A separation between wires and the top of rails of 27 feet is required, and from other wires a distance of at least 5 feet must be maintained. Penalty for non-compliance with the act is also related.

SENATE BILL No. 392, introduced by Senator Scott, prohibits the issuing of franks to any person engaged in the collection or distribution of news, and such an act is made a misdemeanor subject to the penalty stated in the act.

SENATE BILL No. 343, introduced by Senator Scott, is an act to prohibit the giving of franks to any public officers of the State, and such an act is made a misdemeanor and punishable by heavy penalties.

IOWA.

HOUSE BILL No. 209, introduced by Mr. McAllister, provides that rural and farm telephone lines which do not charge or receive tolls shall be assessed by the assessors of the several counties in which such lines are located.

HOUSE BILL No. 253, introduced by Representative Geneva, is an act to exempt from taxation farmers' rural mutual telephone lines so long as no dividends or profits are derived therefrom, and amends section 1,304, paragraph 1, of the Supplement of the Code and section 1,328 of the Code.

SENATE BILL No. 145, introduced by Mr. Moon, provides that section 1,610 of the code shall be amended by inserting after the word "associations" the words "and Farmers' Mutual Telephone Associations." This bill relates to the exemption of such associations from the payment of incorporation fees.

ILLINOIS.

HOUSE BILL No. 306, introduced by Mr. Schermerhorn, Feb. 14, 1907, and referred to Committee on Corporations, is an act to limit telephone rates to $60.00 per annum for single party line telephones in cities or villages of more than 100,000 population; $36.00 per annum for single party lines in cities of less than 100,000, and $18.00 per annum for two or more party line telephones, these rates being for business service. The residence rates mentioned are respectively $30.00 for cities of over 100,000 population, and $18.00 for cities of less than 100,000 population, both these applying to single line service; $12.00 per annum in cities of the latter class for two or more party line service.

HOUSE BILL No. 152, introduced by Mr. Gillespie, Jan. 31, 1907, and referred to Committee on Corporations, is an act to provide for the interchange of business between all telephone companies doing business in the State.

KANSAS.

SENATE BILL No. 237, introduced by Senator Stewart, is designed to enable the city of Wichita to construct, own and operate a telephone system for local service and to extend and operate it through Sedgwick County in conjunction with other systems. The necessary action may be commenced when 50 per cent. or more of the electors file petitions with the city clerk requesting the city to purchase or install a telephone system, or this object may be accomplished by the holding of a special election on petition of 10 per cent. of the electors of the city. Other provisions in the bill relate to the manner of carrying out the details of the work, provided the project is undertaken on petition of the electors.

SENATE BILL No. 526, introduced by Sentor Dolley, covers certain restrictions on the employment of telephone operators by railroad companis for work involving the handling of trains.

SENATE BILL No. 329, introduced by Senator Stillings, has for its object to make it unlawful for any person to destroy an insulator used to support a telephone line under a penalty of a fine varying from one to five hundred dollars or imprisonment varying from one hundred days to one year.

MISSOURI.

HOUSE BILL No. 771, introduced by Mr. Hesseltine, provides that in mutual telephone companies each member shall be equally liable for all the expense of the company and no member shall be liable for more than his pro rata share of any expense or damages for which the organization may be liable. The fee for monthly rental which may be charged by such companies is to be limited to $1.50 for residence and $2 for business houses.

HOUSE BILL No. 368, introduced by Mr. Burch, was drawn as an amendment to Section 1259, Article 6, Chapter 12 of the Revised Statutes, making the clause fixing on telephone companies the liability for special damages, occasioned by the failure or negligence of their operators in handling messages, apply to all companies, whether organized in the State of Missouri or in any other State or Territory.

(*To be continued.*)

A New Method of Fastening Insulators to Metallic Pins

By Carl Egner, Chief Engineer of the Royal Swedish Telegraph Commissioners.

THE method which is most used at present for fastening an insulator to a metallic support, such as is commonly used in Europe, consists, as is well known, in the support being wound round with black oakum, or the like, after which the insulator is screwed on over the oakum. This latter material does not contribute in the least to the insulation, but, on the contrary, diminishes it in a considerable degree, as filaments of the oakum often hang down and serve to conduct the electric current from the lower part of the insulator to the support. The fixing by means of black oakum demands great practice, as a workman unaccustomed to the work finds it difficult to fasten the insulator properly, in addition to which the insulator easily cracks into pieces if the necessary precaution is not observed.

In the new method of fastening the insulator, invented by the writer of this article and first announced in *The Teknisce Tidskrift*, of Stockholm, the inconveniences just mentioned are obviated, at the same time that certain advantages are obtained.

The essential feature of the new method is the use of *insulating caps*, which consist of extra strong, durable paper impregnated with insulating material. The form of the insulating caps is illustrated in figure 1, and the way in which they are used in figures 2 and 3 which accompany this article.

The insulating caps are placed in the requisite number upon the support, the one upon the other (Fig. 2), and are pressed together somewhat by the hand, so that there will be no great space between the cap and the support. The insulator is then screwed on while simultaneously being pressed against the support. The paper is thus pressed into a small compass, and quite fills the space between the support and the inner, threaded part of the insulator, as is illustrated in Fig. 3, where the support with the insulating-caps is shown after the insulator has been first fastened on and then screwed off. The number of caps which are required is ascertained by trial for each special kind of insulator and support. The thickness of the paper is preferably so chosen that 4 to 5 caps have to be used for each insulator.

It will tend to improve the insulation if, before the insulator is screwed on, there are put on its inner surface some drops of an oil which will not become rancid, such as paraffin oil, which

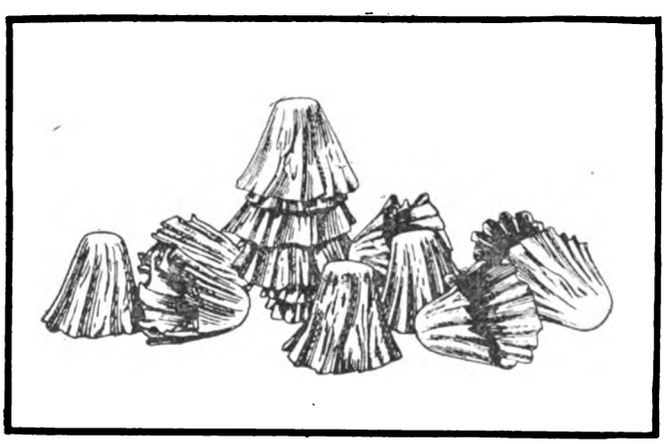

Fig. 1.—Paper caps used in new method of fastening insulators to metallic pins.

can, if desired, be mixed with raw linseed oil. For this purpose a small oil-can may be used.

(*Continued on page 211.*)

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THE EDITOR'S PAGE

IOWA'S BOOSTERS.

WHEN four hundred and twenty-five telephone men came together at a State convention it means something. They do not spend their time and money for a three days' trip in this way unless an inducement has been offered them which will make their excursion profitable; at any rate not in Iowa. The Indepepndent telephone men of Iowa evidently believed themselves both wise and fortunate in the choice of officers, which they made last year. Ever since these men were elected they have worked with intelligence and vigor in assisting the members in their competitive struggles, and have continuously devoted their best efforts to making the organization more complete, strengthening it, and improving the relations between separate companies. The work of the officers of the association, of the district agents, and finally of the Clearing House, have all contributed powerfully to the unification of a system made up, in the main, of some hundreds of comparatively small organizations. The men in the individual companies have everywhere kept in close touch with general development. The Independent spirit and the State spirit have been strong. The officers of the different companies are now, for the most part, working together, not merely as people who have business interests which are recognized as common to all, but as thoroughly friendly associates.

Good as have been the results in general, the convention itself would not have been the success it was without the final campaign to bring out every man that could get away from his home to attend. The work was begun early and followed up carefully The best men in neighboring States were secured as speakers. Strong men from Iowa's own telephone companies freely gave their time to preparations for the convention, and read papers which stand out with unusual merit. Features which were interesting and useful to the rural line companies were given as much attention as those appealing to the men with larger financial interests.

When the convention assembled the results surpassed even the expectations of the most confident. Every well-known telephone man in the State was present, and there were dozens of new men. Enthusiasm and personal good feeling were everywhere in evidence. As each man registered a badge bearing the number of his registration was handed to him, and this novel plan made it possible for each one to identify his newly made acquaintance. This friendly feeling prevailed throughout the meeting, and constantly became more in evidence throughout the proceedings in the convention hall, at the entertainment given at the theatre, and at the enjoyable banquet which closed the final day.

The officers, who received so fitting a tribute to their efficiency by their re-election as a body, and all the men who shared in the meeting, have gone back determind to put a Shield-bearing telephone in every house and business establishment in the State. Within a year they will have gone far toward accomplishing this. Iowa methods and Iowa push, proved by the showing made at this convention, furnish a remarkable example to every Independent organization in the country.

THE VALUE OF THE ESTIMATE.

SOME days ago a subscriber asked our query department what would be a safe figure for the average cost per line for a telephone system in his town. This question was apparently intended to stand alone on its own merits as there was no information given concerning the amount or character of the population, layout of streets, number of subscribers expected when the system should be first built or at the close of any definite period. Nothing was said which would indicate the class of distribution which could be most suitably employed, no figures which would give a line on the amount of underground conduit work and cable or aerial cable or open wire lines, nothing about the size or type of construction of the building or the immediate or ultimate central office equipment to be installed. Now, under the circumstances, wouldn't any telephone engineer have to confess that he was up against it on a proposition like that?

This case does not stand alone, for it is a fact that in a large number of systems which have been put in, the basis for the rates, in so far as it relates to the cost of the system, has ben assumed on insufficient data. The making out of an exact and detailed estimate is considered either to be not worth while or too difficult to be taken up. The men who are handling the scheme appear to think that there is some special Providence which will make actual costs come somewhere near the figures named after what may be called figuring, but from the inexactness of the methods employed is after all not much better than the wildest guesswork.

Telephone men who are going to install a small system should realize that it is just as important to figure its cost carefully in advance as if they were to build in a large city. In the first place, the entire plan of distribution should be worked out carefully so that it may be known at the start how much material of each class will be required. The amount of labor necessary to install each plant is a variable feature which can only be determined, as a rule, by consultation with an expert, and the benefits of such consultation should be obtained by those who are without the necessary experience to figure these amounts accurately themselves.

This sort of work gives a definite basis for all future projects; it enables those in charge of the plant to finance it on a sound basis and to have definite facts to present to those whose interest they hope to arouse. They can then show that the telephone system, far from being a mysterious thing, is a definite business proposition. The cost of a telephone plant may be figured in advance as closely as that of a building or factory and there is no excuse for the omission of this essential step in the undertaking by the promoters.

Once the estimate is made out and the system ready to be built the estimate becomes available as an aid to the prompt and accurate placing of orders. Only such equipment is ordered as will actually be used and this may be all arranged for at one time so as to derive all the benefits from the savings which may be made by avoiding the placing of numerous small orders to cover one piece of work. The estimate, too, makes it possible to keep a check on the actual construction work so that from the time of the conception of the idea of building the system until the plant is actually working the original estimate is in constant and valuable use.

It is possible to compare the actual costs at the close of the work with those estimated, and the figures which represent whatever differences may exist furnish data which make it possible to figure any new work with greater accuracy than was attained in the first attempt. Small telephone companies and organizations should bear in mind that when engaging in this business they cannot be too careful about making accurate schedules of the things which relate to the cost.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

RIGHT OF VILLAGE BOARD TO FIX RATES IN NEBRASKA.

(1) Our company owned and operated a telephone line along the highway and through the streets of a town before the town was incorporated, and operated a telephone station therein. After the town was incorporated, the company was granted a franchise for five years. Now the franchise being about to expire, the village board says it will not grant a new franchise unless the village board is given the right to fix and regulate rates. Under the circumstances, can the village board cause the telephone poles and lines to be removed if the demands of the village board are not conceded?

(2) Have village boards in Nebraska the right to fix rates?

(3) After rates are agreed upon by the village board and telephone company in consideration of granting the franchise, can the company raise the rates if the agreed rates entail a loss on the company?

(4) Has a village board in fact any authority over a telephone company, or its manner of conducting its business further than the ordinary police regulation relative to the placing of poles and wires?

(5) Three years ago we were granted a franchise in a newly organized village. Subsequently all ordinances, including the telephone ordinance passed at that time, were considered void, as no records were made or kept of the meetings or proceedings; thereupon all ordinances were repassed except the telephone ordinance. Upon a request by our company to re-pass the franchise ordinance, the village board refused to do so unless under certain modifications and restrictions as to rates. We have a copy of the original ordinance as passed and published and have proof of publication. We have established and maintained an exchange in the village underthis ordinance and in every way complied with out part of the contract and our rights have never been questioned. What do you consider is the legal status of our company? P. V. T., Nebraska.

WE will answer your questions in the order in which they are written, the numbers of our answers corresponding to the numbers of your questions:

(1) A telephone company has no right to occupy the streets of a village unless it obtains permission from the village board. This question was recently settled by the Supreme Court of Nebraska in the case of the Nebraska Telephone Company vs. Western Independent Telephone Co., 95 N. W., 18. The suit was for an injunction restraining the defendant from constructing its lines in the streets of Louisville, Neb., in such a way as to interfere with the complainant's occupation of the streets. The chief defense was that the complainant itself was without the right to occupy the streets of the village. The complainant based its right not upon the grant from the village, but solely upon the state law, which gives any incorporated telephone company "the right of way along any of the public roads of the State for the erection of poles and wires." The complainant insisted that the term "public roads" in the section quoted included the streets and highways of the village. The Supreme Court held that this was not a correct contention, and found that the complainant company had no right to use the streets of Louisville for its poles and wires. Under this ruling it would seem that the village board might cause the telephone poles and wires to be removed if its reasonable demands are not met. Whether a demand that the village board should be given the right to fix and regulate rates is reasonable, is another question.

(2) Village boards in Nebraska have no right to fix telephone rates as these are subject to regulation by the State Board of Transportation. Chapter 56, laws of 1897.

(3) After rates are agreed upon as a consideration for the granting of a franchise to use city streets, neither party to the agreement could lawfully raise them. We state this conclusion broadly, but the question has never been decided in Nebraska, and it might be held that the agreement to raise rates would be void owing to the lack of power in the village to establish such regulations. Such a ruling has been made in Ohio. Macklin vs. Home Tel. Co., 240 Ohio Cir. Ct. R., 446. An example of a ruling of contrary effect is found in the case of Mahon vs. Michigan Telephone Co., 93 N. W., 629.

(4) Under the decision, in the above item, it seems that village boards would have authority to refuse to permit the telephone company to enter the village limits with poles and wires.

(5) If your ordinance was validly and legally passed, and you can prove it, you are entitled to use the streets of the village according to its terms, in spite of the fact that no records were made or kept of the proceedings. It is the action of the board and not a record of its proceedings, that gives validity to any transaction.

CONDEMNATION OF PROPERTY IN NEW YORK.

IN a proceeding to condemn a right of way for a telephone line, along the highway, in the State of New York, the petition describing the property sought to be condemned included among other things, "the right to trim such trees as may be necessary to protect said line from interference." The condemnation law commanded that the petition should contain " a specific description of the property to be condemned and its location by metes and bounds with reasonable certainty." The court held that the extent to which such trimming would be required should have been specified and held the petition for condemnation proceedings to be insufficient. Under the code of Civil Proceedure (Section 3360, Subdv. 2). Bell Tel. Co., vs. Parker, 79 N. E., 1008.

COMPANY NOT LIABLE FOR LINEMAN'S DEATH.

THE jury in the case of Joseph P. Donohue, as administrator of the estate of Jeffrey J. Donohue, against the Northwestern Telephone Company, which was tried in the District Court at St. Paul, Minn., returned a verdict for the defendant. The action was brought to recover $5,000 for the benefit of the heirs of the plaintiff. His death, it was claimed, was caused by the defendant's negligence.

The telephone company in 1905 extended its wires through Washington county, passing under the wires of the St. Croix Power Company, which carried a powerful current of electricity from Apple River, Wis. At the point where the wires of the telephone company crossed the wires of the power company it became necessary for the defendant company to reset one of the poles of the power company.

For the purpose of measuring the distance from the power company's line to the ground a lineman named Ripson climbed one of the poles and placed a wire hook attached to the end of a tape line over the wire. Donohue held the other end of the tape on the ground. There were iron strands running through the tape and both Ripson and Donohue were killed instantly by the shock.

The defendant introduced evidence to show that both men disobeyed express commands in attempting to measure in that way. It was contended that the tape line was not furnished for that purpose and that both men were expressly warned and ordered to desist at the time they incurred the risk.

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A NEW METHOD OF FASTENING INSULATORS TO METALLIC PINS.

(*Continued from page 208.*)

What is particularly gained by the use of the insulating-caps is an improved insulation. This increase in insulation is derived to a great extent from the fact that the space between the support and the inner mantle of the insulator is always free from

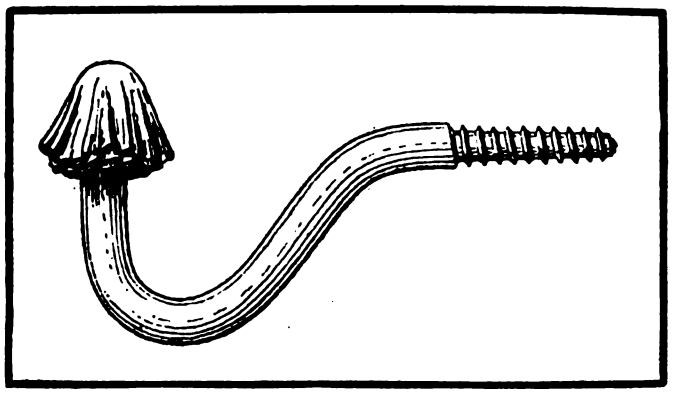

Fig. 2.—Paper caps in place on insulator pin.

filaments liable to become partial conductors when moist, and the like, in contrast to the opposite state of things when black oakum is used. Another cause of the improved insulation is that the insulating-caps cover the support not only at the side but also at the top with a water-tight, insulating mass. Thus a crack in the upper part of the insulator does little or no harm. A large number of experiments have also proved that the insulator can be quite broken off at the top, so that the hole for the support becomes visible, without the insulation being affected in any considerable degree, at least for some time after the accident. This fact is of the greatest importance in all places where the insulators are exposed to damage, and also where insulators are used without having been separately electrically tested, as among such insulators there are occasionally some which have fine cracks extending through them which cause leakage of current in bad weather.

A third and very essential cause of the increase in insulation which is obtained by the use of insulating-caps is that they are impregnated with an oily insulating material. The oily, creased surface of the lowest part of the caps, between the support and the insulator, offers a very great resistance to surface conduction; and as this surface is located at the best protected part within the insulator, it can keep clean and act for a long period. It is clear, however, that by degrees the oil will get dirty by the deposition of dust, etc., and that the insulation will diminish. However, for the reasons mentioned above, the insulation will always be greater than if black oakum is used, and it can easily be increased to its original value by unscrewing the insulator

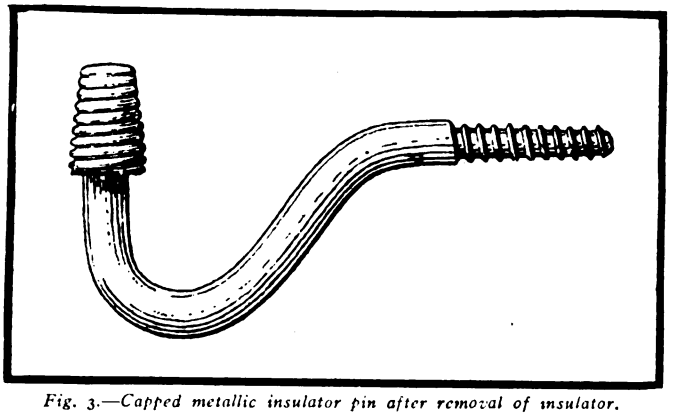

Fig. 3.—Capped metallic insulator pin after removal of insulator.

and putting on new caps; or, if desired, by again soaking the old ones in oil. This would be a most advantageous method of proceeding, especially in the case of important low tension current conductors, as, for example, long telephone lines.

A well known cause which contributes to the deterioration in insulation, always noticed in old lines carrying porcelain insulators, is that spiders and other insects frequent the openings on the underside of the insulators between the mantles and the supports. This inconvenience can probably be remedied to some extent, where insulating-caps are employed, by adding birch-oil or some other substance, the odor of which is avoided by insects, to the material with which the caps are impregnated. This has, however, not been tested in practice.

Insulating caps have other advantages besides the increase in insulation, and the first thing to be noticed is that the mounting of the insulators is greatly facilitated. Experiments have proved that, when insulating-caps are used, the mounting takes only half the time which is required when black oakum is used, while little or no practice is needed to do the work.

In addition to this, insulators with insulating-caps will always be mounted concentrically in respect to the support, for the reason that material in the caps automatically spreads itself equally around the support when the insulators are screwed on. Experience has also proved that breakage of insulators while they are being mounted seldom or never occurs when insulating-caps are used, which means a saving of some importance. Finally, it should be mentioned that the unscrewing of the insulators from the supports is considerably facilitated by this new method of mounting them, a fact of especial importance on some lines where the insulators are much exposed to soot and smoke, and must consequently be taken down to be cleaned.

In order to show in what degree insulating-caps affect insula-

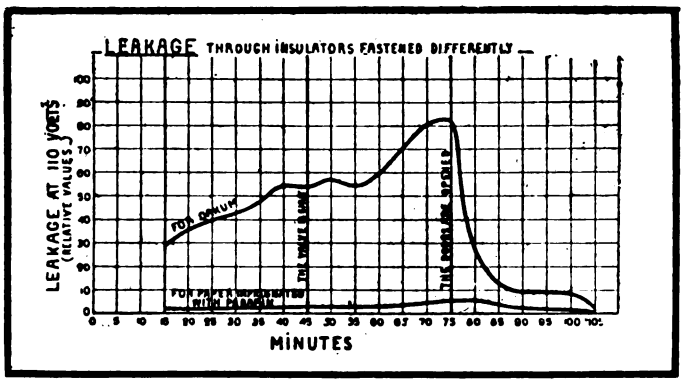

Fig. 4.—Curves showing comparative results of insulation tests with oakum and paraffined paper separation.

tions, diagram (Fig. 4) is shown above, which was prepared by the Material Testing Department of the Royal Technical College of Sweden after comparative trials between insulators fastened with oakum and some insulators fastened with insulator-caps.

The tests were made in a rain-chamber, and the diagram shows the leakage partly during the rain, partly a while after the rain had ceased. From the curves drawn it will be seen that the paper-fastenings gave when the leakage was highest more than 10 times better results than the oakum-fastenings.

REMARKABLE DECISION OF TENNESSEE SUPREME COURT.

TENNESSEE has been witnessing one of the bitterest and longest telephone fights ever known in this country, and it has developed more varied court opinions and peculiar conditions than any controversy of recent years. Nashville, the capital of the State, is the home of the Cumberland Telephone & Telegraph Company, the Bell system, which operates in Tennessee, Kentucky, Mississippi and Louisiana, and naturally the fights brought up in that State get the full benefit of all the tricks and schemes known to the Bell interests.

All these troubles, dating back for several years, have just been aired in the courts of the State and before the State legislature, now in session, and but for the fact that the legislature has just passed a bill providing that telephone companies, as public service corporations, have the right to use the streets and highways of any city or county without the consent of the

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authorities, the end of the fight would not yet be in sight.

The State Supreme Court added another interesting and entirely new chapter to the telephone history of that State last Saturday by rendering an opinion to the effect that no telephone company had a legal corporate existence in the State, as the legislature had never authorized the organization of such companies. This decision was a part of an opinion dissolving the injunction secured by the Home Telephone Company against the Nashville city council after the Court of Appeals had decided in favor of the company.

Two years ago the Home Telegraph Company, a subsidiary corporation to the Home Telephone Company, applied for a franchise to establish an exchange in Nashville, and was about to get the franchise when all of a sudden the city council made a contract with the Cumberland Telephone Company by which the company was to pay into the city treasury $10,000 per year as long as no other company was given a franchise in that city. This put a stop to all negotiations in the interest of the Home Company, which proceeded to erect poles and construct its lines, claiming this right under the general law of 1878, which permitted electrical companies to construct plants anywhere in the State. The Mayor of Nashville ordered the street forces to cut down the poles of the Home Company, and this order led to an injunction granted against the city by a local judge. The city appealed the case to the circuit court, which dissolved the injunction. In turn the Home Company carried the case to the Court of Appeals, and three weeks ago that court reversed the circuit court and granted the injunction prayed for by the Home Company. The city carried the case on to the Supreme Court, which decided last Saturday that no telephone company had a corporate existence in the State, therefore the Nashville city council had a right to cut the poles and destroy the property of any telephone company at will.

The legal representatives of the Cumberland Telephone & Telegraph Company contended that as a telegraph as well as telephone company the Cumberland's corporate existence was intact and legal. On this point the court said:

"The telephone transmits the human voice; the telegraph does not. But the complicated, burdensome, dangerous character of its structure and fixtures is the feature of the telephone system, which makes it cumbersome upon the streets of the city and makes it necessary that it should be under the control and supervision of the city, whose duty it is to keep the streets safe and to protect the lives and property of its citizens. A telephone company has not more right to occupy the streets under a telegraph charter than a street car company would have under an interurban or commercial railroad charter."

In conclusion the court says: "We pretermit all discussion of the provisions and effect of the act of 1885, and also of the charter of Nashville, since complainant could not at the time the suit was brought, nor at this time, install a telephone plant and do a telephone business under a telegraph charter, and this is its main, if not only, object and purpose."

Fortunately for all telephone interests in Tennessee, the legislature has just passed a bill, which has been signed by the governor, authorizing all telephone companies to construct exchanges and lines in any city or any part of the State, so long as streets and highways are not obstructed, and no city has the authority to interfere with them, as they are public service corporations which cannot be controlled by local laws.

The effect of the Supreme Court's decision in this case would be disastrous to the telephone interests of Tennessee but for the new law, and as it is, will cause no little inconvenience to many companies. Good authorities have held that companies organized before the recent decision may now reincorporate under the new law and avoid all legal complications, but even with this holding many troubles confront the telephone companies of that State.

The mayor and twenty-three members of the Nashville, Tenn., city council are under arrest, charged with contempt of the House of Representatives. During the discussion of the telephone bill which recently passed the legislature, the Speaker of the House, John T. Cunningham, made the assertion that it looked very much as if the Cumberland Telephone Company (Bell) had purchased the Nashville city council outright. At a meeting of the city council soon afterward, a resolution was adopted denouncing Speaker Cunningham as a liar. The speaker took the matter to the House of Representatives, introduced evidence bearing out his opinion in the matter and was sustained by the House. The House then declared the mayor of Nashville and the aldermen who voted for the resolution to be in contempt of the House, and instructed the sergeant-at-arms to arrest them, and bring them before the House for trial on the charge of contempt. Habeas corpus proceedings have thus far prevented the city officials being taken before the House.

A LITTLE GIRL IN INDIANA WHO OPERATES TELEPHONE SWITCHBOARD TO SATISFACTION OF PATRONS.

INDIANA not only claims to be the birthplace of Independent telephony—the first Independent company being said to be the one organized to operate a plant in Noblesville—but also claims to have the most youthful operator on record. This distinction has been won by Orpha Estel Bateman, of Fayette, a prosperous village in Boone County. Orpha is now eight years old, and began work at the switchboard, which is situated in her mother's house, at the age of six. She steps upon a box or sits on a high stool and operates a switchboard to which are connected fifteen lines and seventy-one telephones. Trunk lines also extend to three other exchanges, so that she handles not only local, but a considerable number of toll calls. It is said that the youthful operator rarely ever makes a mistake when making calls.

Miss Orpha Estel Bateman, Indiana's Eight-year-old Operator.

SMALL COMPANIES IN INDIANA REFUSE BELL COMPANY'S OVERTURES AND CONSOLIDATE.

AFTER refusing the many flattering overtures and promises made by agents sent into the field by the Bell company, seven prosperous telephone companies doing business in the western and southern portions of Ripley county, Indiana, have been consolidated under one head. Perry F. Brown, of Napoleon, was made president and general manager of the company representing these consolidated interests. Mr. Brown has already made arrangements for free connection with the Decatur County Telephone Company at Greensburg, and through this arrangement Independent long distance service is obtained for the patrons of the new company. There is much rejoicing over the improved arrangements and the patrons are congratulating each other over the escape from the Bell company.

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QUERIES

MOTOR STARTING CONNECTION.—(838).

Will you please explain to me how connections are arranged in a motor starting box of the automatic type so that current only goes through armature when the switch arm is against the magnet, and the arm falls back if the line is interrupted? R. B. C.

In Fig. 838 is shown a simplified diagram of a starting box for a shunt motor. This starting box is what is known as the automatic type. In order to start the motor it is necessary to throw the switch which connects the machine circuit to the power mains, and then to gradually push up the lever *l* over the various studs mounted on the face of the block until the arm is set against the magnet. Armature B is mounted somewhat loosely on the movable arm, so that it can set itself firmly against the pole pieces of the release magnet A.

It will be seen from the circuit of the starting box that as soon as the main switch is closed current passes through the field coils of the motor, and then through release magnet A, and several resistance coils, one of which is joined between each pair of the contact studs in a row set in the starting box. This causes the release magnet to be energized. The arm is then operated, and it will be seen that the stud with which it first makes contact is the one connected to the same side of the power line as the one to which the armature of the motor is attached

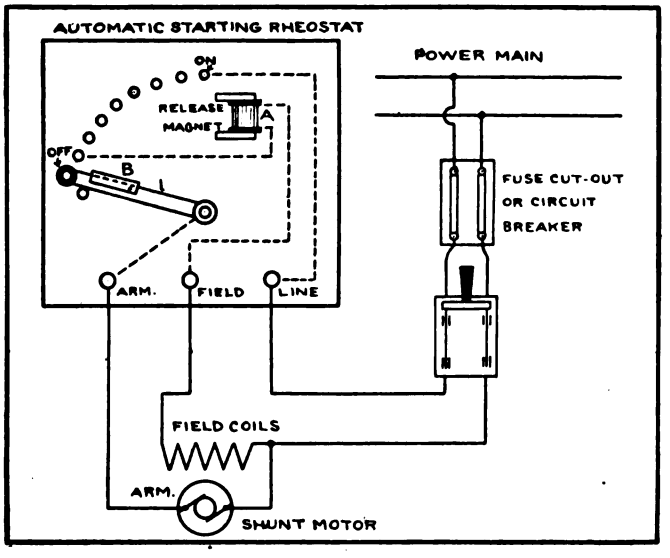

Fig. 838.

through the brushes. Consequently no appreciable current will flow through the armature, although there will be a small amount, owing to the resistance of the release magnet A and the field coils, which in this position of the arm shunt the armature. As the arm is gradually moved toward the "on" position, the amount of current through the armature is gradually increased, owing to the cutting out one by one of the resistance coils which are interposed between the free brush and the side of the line which is connected to the line terminals on the rheostat. When the last stud has been reached the motor is taking the full current for which it is designed. The reason for cutting out the resistance gradually is to give the counter electromotive force time to build up in the armature as if the full current were passed through it before the armature had reached full speed and brought about this action, there would be danger of heating the armature wires to a dangerous point. When the machine is in operation magnet A holds the rotating arm firmly against its pole pieces through its attraction for the armature B. As soon, however, as for any cause the source of supply is interrupted, it will be seen that circuit through the magnet A is interrupted, and the rotating arm, which is controlled by a spring tending to return it to the "off" position, immediately flies back against the stop. This breaks the circuit through the armature, but if, for example, the fuse should be replaced with the switch closed, thus turning power on to the field coil, the armature would be open and would not be subjected to the sudden rush of current which would otherwise be produced.

RUBBING CONTACTS.—(839).

Please explain to me why it is that rubbing contacts seem to be avoided in many parts of telephone apparatus where formerly they were very much used and recommended. B. G. F.

The experience of many telephone companies and manufacturers has been that rubbing contacts do not do what they were formerly supposed to accomplish. The idea was some years ago that the movement of one piece of metal over another would tend to keep both surfaces clean and bright, and in that way a good contact would always be insured between them. At the present time, however, there seem to be good grounds for believing that a considerable number of poor contact troubles occurred in these old rubbing contacts which would never have been brought in if the contacts had been good, clean and bright, and brought together always with a single positive movement. Platinum points are extensively used now, because they do not become corroded, and so there is always a certainty that, unless some solid matter is interposed, good electrical connection will be made when two points are brought together. If you will look over the various pieces of apparatus in which two contacts are brought together, you will find that the two points which are brought in contact do not slide over each other in the apparatus made by most manufacturers.

DUTIES OF A TRAFFIC MANAGER.—(840).

Will you please state in your columns what the duties of a traffic manager are, especially in the larger exchanges? C. B. T.

The duties of a traffic manager vary greatly in different parts of the country. Of course, it is understood that the traffic manager has control of the service and traffic in the entire territory in which the company operates, including all exchanges. To him are responsible, either directly or indirectly, all persons having anything to do with the routeing, operating, service testing or any other special branches of traffic work. His assistants look out for such work as figuring the amount of equipment which is necessary for switchboards and its arrangement at the several positions, the special arrangements for handling the company's business which must be made in the way of equipment for chief operators, information operators, supervisors, etc., in addition to that provided at the regular switchboard.

He also has charge of all matters pertaining directly to operating, such as the routeing of toll messages, and all details of methods of handling toll, local and trunk calls. He endeavors to keep in close touch with the actual amount of business handled, and arrange, in case of circuits between exchanges, for the most economical routeing, and plan such new lines as will probably be necessary sufficiently in advance of the actual requirements to give the construction department time to get the work done.

Service tests are made by special inspectors or by chief operators, and records showing the results of these tests are analyzed, as well as peg counts showing the number and classification of calls, and such action is taken as is necessary to bring the service up to the proper standard and to make a reasonable distribution of the load in the exchange.

Under these general divisions there is a great deal of detail which is handled in various ways by the department under the traffic manager's charge. These details vary greatly in different territories on account of the size of the system, etc.

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With GRAY PAY STATIONS you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

GRAY TEL. PAY STATION CO.

HARTFORD, CONN.

OUR '07 CATALOGUE SENT ON REQUEST

FOR SALE

For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

FOR SALE—500 single pole telephone receivers; 75 Stromberg-Carlson 4-bar hand generators in oak boxes, new; 900 pair 16 ohm electro-magnets, good ones. Auburn Telephone Co., Auburn, N. Y. 792

FOR SALE—Portable gasoline power winch complete: built for pulling cable. Will do the work of five men. A bargain. Write for description. J. W. Wright, 1304 Arch street, Philadelphia, Pa. 797

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WE are constantly in need of experienced men to work on high grade telephone apparatus, particularly assemblymen. The Wire & Telephone Company of America, Rome, N. Y. 794

CABLE SPLICER wants position. Experienced. Best references. Address, Box 796, care American Telephone Journal, 100 William Street, New York. 796

WANTED—Experienced telephone solicitors. Zenith Telephone Company, Duluth, Minn. 798

WANTED—Telephone inspector, familiar with automatic equipment. Must be a first class man, familiar with all details of Strowger Automatic. Good wages and prospects for right man. Do not apply unless you are thoroughly capable. Northeastern Telephone Co., Portland, Me. 801

WANTED---Continued

WANTED—Position as solicitor in contract department by man who understands all branches of the department. Married, temperate and trustworthy. Highest references. Open April 1. Address Box 802, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 802

HIGH CLASS maintenance and switchboard installation man would consider proposals for change. Northwest preferred. Any equipment put in first-class condition. Past record of seven years open to closest investigation. Technical education. Salary $1,500. Address Box 804, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 804

WANTED—Position as manager of exchange under 1,000 subscribers, or line foreman, by man of 25 years. Six years practical and technical. Temperate. References. Address Lock Box 176, Scottsburg, Ind. 805

WANTED—Position as manager of contract department by a man with a thorough knowledge. A1 references. Open April 1. Address Box 803, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 803

WANTED—Salesman capable of taking important selling position in organization making full line of telephone apparatus. Experience with superior telephone equipment essential. An assistant sales manager of the brainy, aggressive type would probably satisfy. Address, Box 806, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 806

WANTED—Young man, a hustler, to take charge of assembling room in telephone factory. Must be thoroughly familiar with private line and inter-communicating circuits. Also two good assemblers. Address, Box 807, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 807

Poles Must be Anchored

The question is how to do it. Why not adopt the modern D. & T. way?

D. & T. Anchors

can be driven anywhere any time of the year. They pull against solid earth and hold as well as a dead man.

Know More About Them

THE D. & T. ANCHOR CO., La Crosse, Wis.

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Write To-Day For Samples and Prices. Toll Bills. Rental Bills

Form G-90.	For Small or Branch Exchange use; carries account for 2 years.
Form G-90-A.	For Large and Medium City Exchanges and Systems of Exchanges; the most complete form made.
Form G-90-B.	For City Exchanges having many Rural Lines.
Form G-90-C.	For City Exchanges, Rentals and Toll Charges separated.
Form G-90-E.	For Small Exchanges, Rentals only.
Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
Form G-90-H.	One subscriber to a sheet; carries account 12 years.
Form G-90-I.	For Small Exchanges; Bound Books; carry 12 subscribers on a page for 1 year.

THE Edwards-Hine Co.

TELEPHONE SYSTEMATIZING DEPT.

5 and 7 PEARL STREET (EAST), GRAND RAPIDS, MICH., U. S. A.

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IN THE OPERATING FIELD

MAKING DIRECTORIES PAY.

ON several occasions we have referred to the large number of advertisements carried in the directory of the Maryland Telephone Company, of Baltimore, Md., and the profit thus derived by the company, not only directly by printing advertisement of other people, but by using its directory as a means of advertising its own service. Not only are the inside pages of the book used for this purpose, but the company has obtained good results by pasting a sticker on the outside of the front cover. The latest book which has been issued carries a slip arranged and worded as follows:

IMPORTANT.

Are you losing telephone calls on account of "Line busy"? A 'phone for in-coming calls only will leave your present one exclusively for out-going service, and insure your receiving all telephone messages intended for you.

Get our rates for this special "In-coming" Service.

TELEPHONES:
Maryland 27 or 28.
Courtland 18.

MARYLAND TELEPHONE CO.,
Traffic Department.

That the company has other effective ways of getting new busibusiness is shown by the constantly increasing size of the directories which it issues.

BELL TELEPHONE COMPANY GETS AFTER FARMERS' LINE BUSINESS WHEN PUSHED BY ILLINOIS INDEPENDENT COMPANY.

AT Highland, Ill., up to a short time ago, the farmers were said to have been practically unable to obtain telephone service on any reasonable terms. Although the Bell company made connections in the thickly settled portion of the town, its charges for building in the rural regions were so heavy that the farmers could not afford to use its lines. The demand for telephone service became so urgent that an Independent company was organized and its lines are now being built.

Fearing the loss of its town business, as well as the opportunity to later acquire the country subscribers on advantageous terms, the Bell organization immediately became very active. The Independent company, however, being organized at a time when dissatisfaction with the company's methods was strong, has an immense advantage and is expected to obtain contracts from nearly the entire community within a short time.

The officers of the Independent company, which goes under the name of the Farmers' and Merchants' Telephone Company, are: Jas. S. Cuming, president; W. R. Lea, general manager, and J. F. Briethaupt, superintendent.

INDIANA INDEPENDENT TELEPHONE MEN MEET AT COLUMBUS.

AT the first quarterly meeting of the Fifth District of the Indiana Independent Telephone Association, held at Columbus, the interest taken and the encouraging reports of progress and increase of business showed the quality of the work which is being done by the representatives of the sixteen companies present. This district includes Bartholomew, Brown, Dearborn, Jackson, Jefferson, Jennings, Ohio, Ripley and Switzerland counties. The progress made by the Independents in this territory is indeed marvelous. A half dozen years ago the Bell company boasted that no Independent company could ever get a foothold in these nine counties. At present the Independents are operating three telephones to each one owned by the Bell.

One of the most interesting features of the meeting was the reading of a paper by Charles S. Norton, of Indianapolis, secretary of the State Association, on "How to Finance Telephone Properties." Mr. Norton's paper brought out numerous facts that the members had desired to know for some time.

One new company was added to the membership roll. W. H McPherson, of Brownstown, was elected president and W. B. Reed, of Seymour, secretary.

CUMBERLAND COMPANY DELAYS COMPLIANCE WITH DEMANDS OF MISSISSIPPI RAILROAD COMMISSION.

GENERAL MANAGER Leland Hume of the Cumberland Telephone Company is still battling with the powers in Mississippi in an effort to stay the execution of orders of the State Railroad Commission to reduce rates in numerous cases and improve service in others. A general complaint seems to exist in that State against the Cumberland company and the commission has demanded that the company shall act in a number of instances. General Manager Hume has just made a tour of the State endeavoring to explain to the complainants that the company will remedy all evils in due time, but did not state when. In the meantime there are coming to the commission every day complaints of the neglect of the company to carry out the orders of the commission.

OLESEN'S KICK.

MISTER Sandusky telefone and companne, Ohio city:

dear sir I receev de tellefone witch I by from you alrite but for why you don't send me no book what is de use of the tellefone when She don't have no book. i am loose to me what kustomer i don't can't call sure ting by no having de book and dats not very pleasure for Me. what is de matter wit you mister Sandusky tellefone and companne. is no my moneys so good like other mans. You loose to me my trade and i am veree angeree for dat and now i tells to you dat you are a dam fools and no good mister Sandusky tellefone companne. You should come at once to-morrow and skrew off the wall your tellefone for shure bekawse you are such a dam foolishness peeples.

Yours respeckfulle,
CHARLEY OLESEN.

P. S.—since i write dis letter i find de book alrite. excuse me.

FIFTEEN INDIANA SUB-LICENSEES SEVER CONNECTION WITH THE BELL LINES.

FIFTEEN rural and co-operative telephone companies in Boone and Hendrick counties, Indiana, operating nearly a thousand telephones, have severed all connections and business relations with the Bell telephone company, of which they formerly were sub-licensees, and returned to the original Independent field. This step is said to be the beginning of a movement upon the part of the several dissatisfied local sub-license companies in Indiana that have been beguiled into business relations with the Bell company. Independent long distance connections will be afforded these companies, so there will be no necessity for them to repeat their unsatisfactory experiences with the Bell service.

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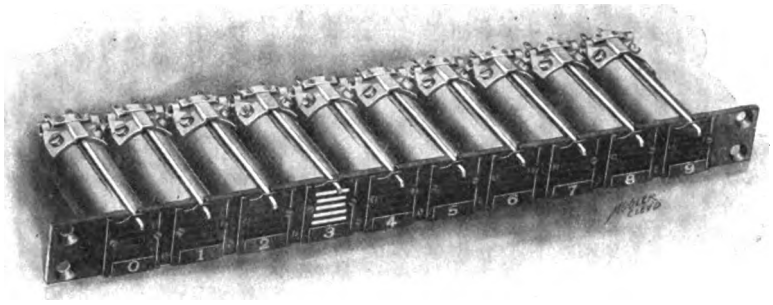
The Problem Solved

A self-restoring signal combining the advantages of a lamp signal with the simplicity and efficiency of North's standard magneto drop.

By its use your present operating force can handle a greater volume of business and at the same time raise the quality of your service to the best.



The signal is electrically self-restoring — this means the elimination of the numerous objectional features of the operator - mechanical - plug - restoring drops. In the first place it permits of mounting the signals and jacks separately, the signals above, so that the cords and plugs will not obscure or interfere with the line signals, and by being mounted apart permits of easy access to all the parts. Furthermore, there is no extra effort required on the part of the operator to force the plug into the jack, nor added mechanical complications and consequent increased wear on plugs and jacks, as in the push-plug restoring types. Being truly self-restoring, this signal can be used on multiple switchboards—a practical impossibility with mechanical-restoring drops.

The signal is identical in construction with North's standard magneto drop, with an auxilliary locking coil and circuit closing device. Instead of a drop shutter, a lift shutter of the gridiron type is used, which, when lifted by the latch displays a white front. Like the standard drop, a tubular shell bored from solid Norway iron rod is used, thus insuring the same effective magnetic circuit. The adjustment is also identical—simple and accurate.

The signal mounts on the same width strip as the standard drop, and can be used in the same switchboard panel with the standard drop.

The operation is simple—when a subscriber rings, the generator current operates the signal—the auxiliary circuit locks it in position firmly. The amount of current required to operate the locking coil is a negligible quantity. When the operator places answering plug in line jack, the locking circuit is opened and the signal restored to normal position.

We claim for this signal—simplicity—efficiency—reliability—flexibility—and excellence of mechanical and electrical design. We know we can substantiate our claims, if you will give us an opportunity to show you. Further, we know you will appreciate what it will do towards improving your service as well as reducing your operating expense.

Let us tell you more about it. Drop us a postal.

The North Electric Company,

DALLAS
CLEVELAND
KANSAS CITY

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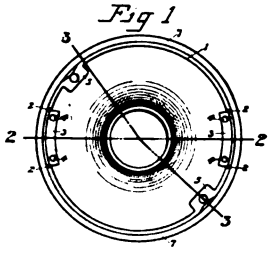
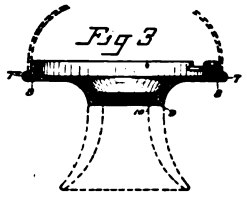
TELEPHONE PATENTS

TRANSMITTER FRONT.

Alfred H. Weiss, Chicago, Ill., patents (No. 847,449; dated March 19, 1907; filed January 2, 1907; serial No. 350,442) and assigns to the Kellogg Switchboard & Supply Company, Chicago, Ill., a transmitter front.

This invention provides for a method of manufacturing a transmitter front which may be pressed from sheet metal. It is originally formed in the shape of a complete ring, and sawed or cut at points 2, after which lugs 3 are bent in to form a support for the bridge, which is secured to these lugs by screws passing through holes 4. Damping spring supports are formed





by lugs 5, which are left upon the otherwise circular stock and are bent back at right angles to the rim. By suitable shaping machines the stock may be folded to form the shoulder 7, against which the enclosing case may rest, and also to provide the necessary thickness of stock for the threads 10 by folding back the sheet upon itself at 9.

SELECTIVE SIGNAL.

Michael H. Degnan, Nashua, N. H., patents (No. 835,704; dated November 13th, 1906; filed February 20th, 1906; serial No. 302,017) a selective signal.

This device consists of a grooved tilting plate mounted on a shaft in engagement with a cam which, on rotation, causes the plate to be tipped to an angle from the horizontal position. The shaft on which the cam is mounted is rotated by a succession of impulses communicated through the action of an electromagnet controlled by pulsating current from the exchange. If the number of impulses is such that the shaft stops when the lower part of the cam engages the stud connected to the plate a ball runs to the foot of the groove in the plate, where it closes a local circuit including a bell and battery. Cams at different stations are set with low points at different angular positions on the shaft, so that at all stations but one the low points pass the shaft quickly, while at the desired instrument the last impulse leaves the low point in engagement with the plate stud.

TELEPHONE SYSTEM.

James H. Gordon, Cooper, Texas, patents (No. 821,482; dated May 22, 1906; filed June 10, 1903; serial No. 160,939) and assigns one-half to James Patterson, Cooper, Texas, telephone system.

The inventor describes apparatus and circuits by means of which he intends that secret conversation may be held between any two instruments upon a party line. A specially arranged hook-switch is used to cut out all stations except those between the two which are talking. This separates the line into sections, to one of which the instruments between which conversation is being held form terminals, while at all the instruments intermediate between these two, receiver hooks are locked in their lower positions. Under these conditions it is obvious that the secondary circuits will be open, and no conversation will be possible. The arrangement for locking the hooks comprises a suitable magnet, operated through a ground connection from a grounded battery which is individual to each instrument and suitably connected to the line for action upon distant stations.

SELECTIVE LOCK-OUT PARTY LINE SYSTEM.

Homer J. Roberts, Evanston, Ill., patents (No. 837,251; dated November 27th, 1906; original application filed September 18th, 1902; serial No. 123,958; divided and this application filed October 1st, 1903; serial No. 175,265) a selective lock-out party line system.

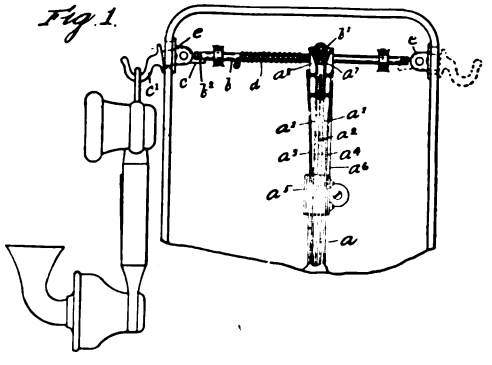
This patent covers a lock-out party line system employing at each subscriber's station three relays, with suitable auxiliary mechanism for controlling the circuits. A special switching arrangement is provided at the central office, in connection with a plug which the operator may insert in the jack connected with any line over which it is necessary that she should have control for the purpose of operating the selective lock-out mechanism at any station.

TELEPHONE SWITCH OPERATING MECHANISM.

Frank M. Potter, Jr., Rome, N. Y., patents (No. 847,367; dated March 19, 1907; filed May 28, 1906; serial No. 319,080) a telephone switch operating mechanism.

This invention covers a telephone hook switch mechanism which can be actuated from either side of the telephone box by a mounted hook.

In the illustration b represents a rock shaft supported by suitable bearings, and extending from side to side of the base which supports the part. Arm b^1 extends radially from the shaft b,



and its enlarged end is adapted to engage actuating springs of the switch a. Arm b^1 works in the slot a^7, which guides it. The spring d is connected to the shaft and to the base, and tends to force the arm b^1 into the slot between the springs a^7 a^8, while this tendency is opposed by the force exerted by the weight of the telephone through lever c. Upon the removal of the telephone the tension of springs causes the shaft b to rotate, effecting the necessary changes in the position of the switch springs.

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Blue, Black, White and Brown Printing on Paper or Cloth

Telephone Companies can mail their tracings to us. We make as many prints as desired and return them by mail or express in waterproof packages.

BEST GRADE OF WORK AT VERY REASONABLE RATES

We sell the finest qualities of prepared blue printing paper and cloth, and special grades of tracing paper and cloth at low prices to telephone companies.

Also drawing instruments and a full line of draughtsmen's supplies.

MAIL ORDERS ARE OUR SPECIALTY

H. B. Christensen Co.
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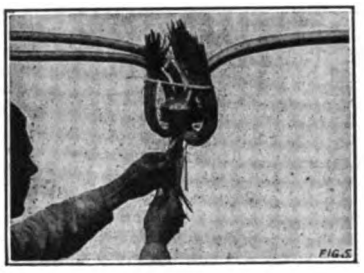
33 Murray Street - New York

A MONEY SAVER



A MONEY SAVER

YOUR TIME

will earn money in direct proportion to your use of it. The use of the Hargis Cable Splicing Joint will enable you to save time. It will enable your regular linemen to make a better splice than an expert cable man. The picture above shows how easy it is to splice pairs by means of the Hargis Joint. They can all be tied out of the way while the splicing is going on.

The Hargis Joint is not a wiped joint in any sense of the word. The cables are simply put thru the cap and lead gasket and the lead is then poured in until the cup formed by the gasket and the brass cap is full. What wiping is done is simply to smooth off the rough edges, and does not add to the weather-resisting qualities of the joint.

HOW TO SAVE YOUR TIME

Let us send you descriptive matter of the Hargis Cable Splicing Joint shown above. By its use you can make a better splice in less than one half the time it takes to make a horizontal wiped joint, and at the same time you can always get into it by means of special tools to test out for trouble along the line.

It will pay you to write for our descriptive matter.

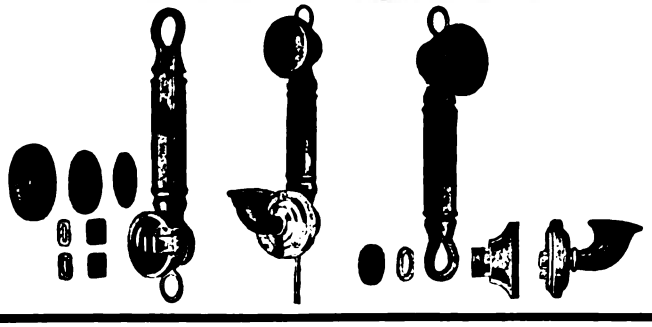
W. N. MATTHEWS & BRO.
Manufacturers of Patented Money Saving Specialties
242 North Second Street ST. LOUIS

The Subscriber sees that they are Convenient, Efficient and Attractive.

The Exchange Manager sees Lowest Maintenance Cost, Increase in Number of Subscribers, Demand for Hand Telephone.

Easophones

The WIRE and TELEPHONE COMPANY of AMERICA
ROME, N.Y.



The Newest Pay Station

IS THE

LIVERMORE

It has only **ONE SLOT.** Coins of all denominations are dropped into this slot. They then fall into a "coin separator," which directs them to the proper signal slot. The signal gongs are fastened to a "bell metal" plate. This plate supports the transmitter arm so that the signal gongs are in metallic contact with the transmitter. The plate acts as a resonator to intensify and clarify the signals.

Write for Further Information to

Livermore Pay Station Co.

4 BOWKER STREET
BOSTON, MASS.

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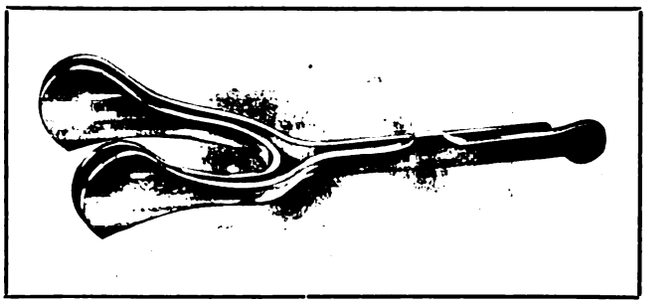
IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

THE DEAN REMOVABLE SWITCH HOOK.

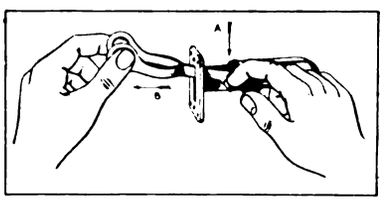
BEFORE refinements of design had been introduced into all the details of telephone apparatus there was no settled common form of switch hook, and many of the faults of operation and a large portion of the troubles in subscribers' instruments were due to bad springs and poor contacts.

The kind of switch hook now most commonly employed upon subscribers' telephone wall sets is known as the long lever hook. In spite of the many improvements in this class of apparatus, it is only recently that the Dean Company has eliminated certain weaknesses of design. For instance, the improvements which are employed in the design of the hook and switch illustrated on this page make it possible to put a hook in a position from the outside of its housings. It is readily removable by hand, and may be taken out when the instrument is to be shipped, so that it is not liable to injury in handling when packed, as it would be if it protruded from the instrument.

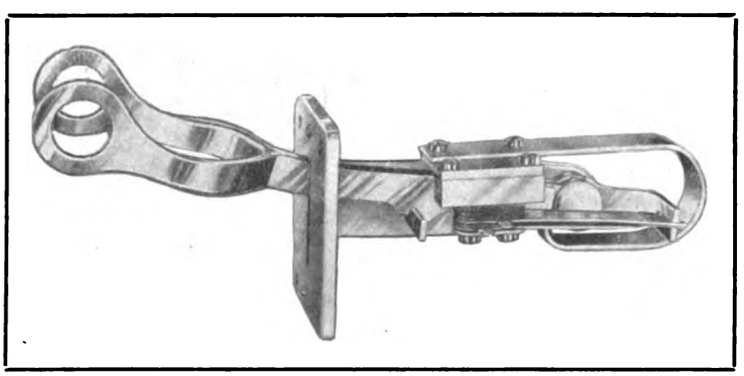


The Dean Hook Lever Blank, Formed of a Single Piece of Sheet Brass.

Although the hook is easily removed and replaced without the use of tools of any kind in the manner shown in one of the accompanying illustrations, it can only be taken out by opening the lid of the telephone box, as the release is located on the body of the switch. No amount of shaking or manipulation from the outside will cause it to become disengaged from its fastenings. All springs make firm contacts and have platinum points. The lever is made from a single piece of heavy sheet brass formed into shape cold, making a very rigid and firm hook designed to stand any ordinary or unusual strain which may be reasonably placed upon it. This is one of the details of design and workmanship which gives to the Dean subscribers' telephone set its high quality. Information concerning telephone instruments will be cheerfully furnished by the Dean Electric Co., Elyria, Ohio, on receipt of a request.



By Releasing the Spring and Pulling on the Hook It May be Withdrawn by Hand.



The Complete Dean Hook Switch, from which the Hook May be Removed Without the Use of Tools.

THE CENTRAL TELEPHONE AND ELECTRIC CO., 2131 Lucas avenue, St. Louis, and 237 Commerce street, Dallas, Tex., is sending out folders giving a special proposition on the Ajax dry battery, which is claimed to give just what telephone men want in the way of high and long maintained voltage with a large current output through its entire life. This battery has been tried out in a large number of exchanges. The company is ready to give prices on trial lots or annual contracts, and will tell what the cell can do to any telephone manager who will write for information.

THE NORTH ELECTRIC COMPANY, Cleveland, O., has brought out a new self-restoring signal, in which it claims to combine the advantages of the lamp signal with the simplicity and efficiency of the standard magneto drop. This signal is electrically self-restoring, and in no way resembles the plug restoring drops which are used in association with jacks. This makes it possible to mount the signals and jacks separately, and do away with any difficulty which may arise from possible interference of cords and plugs with other line signals. The company believes that this signal is a distinct improvement in this line of apparatus, and is sending out full details to all interested persons who write for information.

THE LAKE YALE LUMBER COMPANY is the new name chosen for the corporation formerly known as the Frost Cross Arm and Lumber Mfg. Co.

The headquarters of this company were formerly in Cleveland, Ohio, but are now at Grand Island, Florida, where the mills and timberland also are located. The company makes a specialty of heart specification cross arms of long leaf southern yellow pine. It is in an exceptionally strong position to supply these cross arms either from stock or specifications in all sizes.

The officers of the company are: A. S. Wade, president; I. R. Wade, treasurer; Rene Casters, secretary, and Fred D. Blake, general manager.

THE STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY, Rochester, N. Y., reports the receipt of signed contracts up to March 23d, 1907, as follows:

Four sections, 700 additional line equipment, Main Exchange, Seattle, Wash.; two sections, 380 additional line equipment, East Office, Seattle, Wash.; two sections, 300 additional line equipment, Queen Anne Exchange, Seattle, Wash.

Switchboards have been ordered for use at Port Washington, Wis.; Fairport, N. Y.; Louisville, Ky.; Fort Wayne, Ind.; Hammond, Ill.; Magnolia, Ill. Seven central energy P.B.X. switchboards, Seattle, Wash.; Brackenridge, Pa.; Harrisburg, Pa.; Rochester, N. Y.; Leavenworth, Kan.; Minier, Ill.; Eden, Ill.; Goldonda, Ill.; Arcanum, Ohio; Joy, Ill.; Garfield, Ky.

Three generator call switchboards go to Seattle, Wash.; four to Sunnyside, Wash., and others to Pomona, Ill.; Peck, Idaho; Culdesac, Idaho; Des Moines, Ia.; Madison, Wis.; Louisville, Ky.; Des Moines, Ia.

Numerous orders for telephones are also reported aggregating over two thousand instruments.

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Standard Vitrified Conduit Company

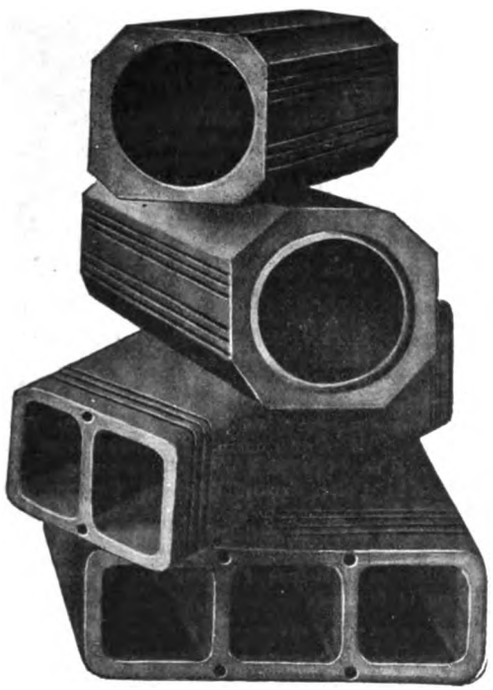
B. S. BARNARD, President.

MAIN OFFICES—39-41 CORTLANDT ST.—NEW YORK, N. Y.

MANUFACTURERS OF

MULTIPLE DUCT VITRIFIED CONDUITS

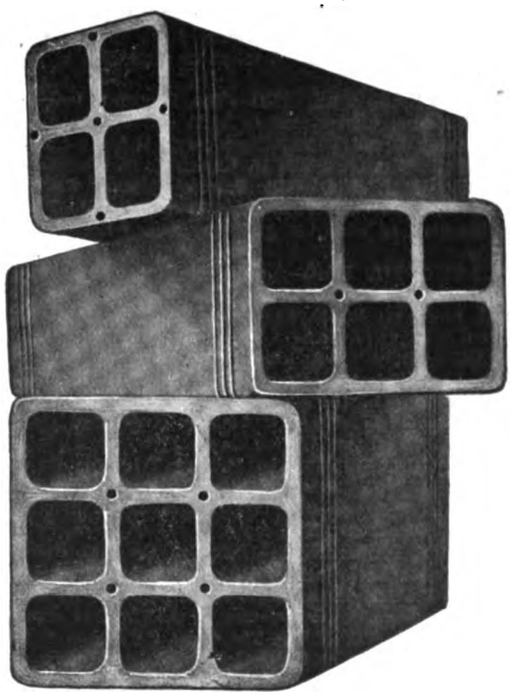
OUR FACTORIES ARE THE LARGEST IN THE WORLD
ANNUAL CAPACITY, 40,000,000 FEET OF CONDUIT



SINGLE DUCT
3½ inch Round Bore
3½ " " "
4 " " "
3½ " Square "
3½ " Round "
(Socket Joint)

MULTIPLE DUCT
2, 3, 4, 6 and 9 Duct
3½ inch Square Bore
3½ " " "

MULTIPLE DUCT
2, 3, 4 or 6 Duct
3½ inch Round Bore



OUR STANDARD MANDREL SUPPLIED FREE TO OUR CUSTOMERS

A few of the Big Contracts placed with us:

Stromberg Carlson Telephone Mfg. Co.
Niagara Falls Power Co.
Charles E. Phelps, Jr., Baltimore, Md.
New York Edison Co.
Brooklyn Edison Co.
Philadelphia Electric Co.
Norfolk Railway & Light Co.
Montreal Light, Heat & Power Co.
Bell Telephone Co., U. S. A.
Bell Telephone Co., Canada
Pennsylvania R. R. Tunnel, N. Y. City
Trolley Tunnels, N. Y. City
Rapid Transit Subway, N. Y. City

ANNUAL CAPACITY:

40,000,000 Duct Feet

WRITE FOR CATALOGUE

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NEW COMPANIES.

GUYTON, GA.—The Effingham County Telephone Company has been incorporated and the work on its system has been commenced. It is the company's intention to connect with Meldrim and Savannah.

FULTON, ILL.—Articles of incorporation have been filed by the Fulton Telephone Company. It has an authorized capital stock of $2,500, and the incorporators are W. H. Durkee, Robert Ritchie, Garrett Naniga and others.

VERMILION, ILL.—The Stratton Mutual Telephone Company, with a capital stock of $2,500, has been incorporated by Charles Watson, H. M. Huffman and O. J. Rowe.

CORY, IND.—The Perry Telephone Company, capitalized at $5,000, has been incorporated and expects to build and operate a telephone system in Cory and Clay county.

ELLETSVILLE, IND.—The Citizens' Telephone Company has filed articles of incorporation. The capital stock is placed at $2,600, and among the incorporators are F. I. Owens, J. S. Brown, J. H. Matson, J. K. Phillips and T. E. Minet. A telephone plant is to be constructed in Elletsville.

McCUTCHANVILLE, IND.—The Southern Indiana Telephone Company has been incorporated to build and operate a telephone system in McCutchanville and Vanderburg county. It has a capital stock of $10,000, and the directors are Philip H. Kippel, T. H. Umbalk and Daniel Crisp.

PLYMOUTH, IND.—The Patrons' Mutual Telephone Company, of Plymouth, has been incorporated with a capital stock of $50,000, and it is its intention to construct and operate a telephone system in Marshall county.

ELLSWORTH, KAS.—An Independent telephone company has been organized at Ellsworth, and the following officers have been elected: J. M. Reed, president; W. D. Sturgis, vice president; M. L. Amos, secretary; Robert Allan, treasurer.

OAKLAND, KY.—Articles of incorporation have been filed by the Three Forks Telephone Company, of Three Forks, Warren county (P. O. address Oakland). It has an authorized capital stock of $300, and the incorporators are G. W. and E. U. Mottley, of Allen county, and J. H. Souther and J. E. Moulder, of Warren county.

MISSOULA, MONT.—The People's Telephone Company, of Missoula, has filed articles of incorporation. The capital stock is placed at $10,000, and the incorporators are F. M. Taylor, R. D. Prescott, J. A. Moss and W. R. Hamilton, all of Missoula.

ASBURY PARK, N. J.—Owing to the dissatisfaction with the Bell company's service in Asbury Park, the Asbury Park Hotel Keepers' Association, of which M. E. Sexton, George Matthews and others are members, is endeavoring to organize an Independent company.

CEDAR GROVE, N. C.—The Cedar Grove-Egland Telephone Company, with its main office at Cedar Grove, has been incorporated with a capital stock of $10,000. Among the incorporators are J. F. Anderson, M. T. Wilson and others.

LIBERTY, N. C.—An Independent telephone company has been formed to build a telephone system in Liberty, and a long distance line from there to Ramseur. The new company will make connection with the Asheboro Telephone Company.

TAYLORSVILLE, N. C.—The People's Telephone Company, of Taylorsville, has been incorporated to construct and operate a long distance telephone line between Statesville and Taylorsville. J. L. Stevenson has been elected president.

McHENRY, N. D.—The Mutual Telephone Company, of McHenry, has been organized.

SPRATT, O.—The Muskingum County Farmers' Telephone Company, of Spratt, has filed articles of incorporation. It has a capital stock of $10,000, and J. T. Elliott, W. T. Blackstone, S. S. Neff and C. W. Elliott are among the incorporators.

HOOKER, OKLA.—The Hooker Telephone Company, Hooker, Okla., with a capital stock of $20,000, has been incorporated by N. O. Stephenson and others.

BRISTOL, TENN.—The Boone's Creek Telephone Company has been organized and has built part of its system.

DRESDEN, TENN.—The Weakley County Rural Telephone Company is being organized. Lines are to be built to Latham, Dukedom, Palmerville and Fulton, Ky., and connect with the rural lines there. The headquarters are to be at Dresden.

MUNFORD, TENN.—An Independent telephone company has been organized at Munford and the following are among the incorporators: J. B. Witherington, E. H. Wooten, P. W. Lanier, S. H. Bass, W. M. Abernathy, E. W. Starnes and others.

BRIGGSVILLE, WIS.—Articles of incorporation have been filed by the Briggsville & Big Springs Telephone Company, of Briggsville. It has an authorized capital of $2,000 and the incorporators are F. J. Kimball, A. L. McDonald and W. C. Kimball.

NOYAN, QUEBEC, CAN.—An Independent telephone company, to be known as the Citizens' Telephone Company, has been organized at Noyan.

FRANCHISES.

DOWNEY, CAL.—The Downey Home Telephone & Telegraph Company has been granted a franchise to operate a telephone and telegraph business in Norwalk, Downey and Los Nietos.

ANTHON, IA.—The Farmers' and Business Men's Telephone Company, of Oto, has applied for a telephone franchise at Anthon.

LA GRANGE, MO.—The Mississippi Valley Telephone Company has been granted franchises by the cities of La Grange and Canton.

DEXTER, ORE.—The Dexter Telephone Company has applied for a franchise to extend its lines from Dexter to Springfield.

SPRINGFIELD, ORE.—Application has been made by the McKenzie Telephone Company to construct a line from Springfield to Leaburg.

FINANCIAL.

BIRMINGHAM, ALA.—The People's Home Telephone Company has increased its capital stock from $200,000 to $300,000.

PELICAN RAPIDS, MINN.—A dividend of 10 per cent. has been declared by the Pelican Telephone Company.

KANSAS CITY, MO.—The directors of the Kansas City Home Telephone Company have increased the regular quarterly dividend from 1¼ to 1½ per cent., thus placing it on a basis of 6 per cent. per annum.

HARTINGTON, NEB.—The Cedar County Telephone Company has declared a dividend of 8 per cent.

HIGH POINT, N. C.—A 10 per cent. dividend has been declared by the North State Telephone Company.

BUCYRUS, O.—The Bucyrus Telephone Company has increased its capital stock from $65,000 to $100,000.

COMBINATIONS.

MAJENICA, IND.—Arrangements have been made by the Majenica Telephone Company to purchase the Markle exchange.

CHERRY VALLEY, N. Y.—The controlling interest in the Cooperstown, Cherry Valley & Sharon Spa Telephone Company has been acquired by H. P. McDonough, manager of the Otsego Home Telephone Company, and Henry Rathbone, manager of the East Springfield Telephone Company. Mr. McDonough has been elected general manager, and Mr. Rathbone, superintendent. Arrangements are being made by the new owners to extend the line to Sharon Spa.

ELECTIONS.

TEHERAN, ILL.—The Teheran Telephone Company has elected the following officers: Mr. Benham, president; Mr. Aldrich, secretary and treasurer.

ELIZABETH, IND.—At a recent meeting the Harrison County Telephone Company elected the following officers: President, P. J. Blonk; vice president, J. Zollman; treasurer, C. Treese; secretary, E. Smith.

NEW CAMBRIA, KAN.—The following officers have been elected by the New Cambria Telephone Company: Frank Knittle, president; Wm.

NEWS—WANTED

THE matter contained upon the message and Operating Field pages of this paper is contributed largely by our special correspondents. We believe, however, that there are many valuable items of telephonic interest which are never brought to the attention of the public. There is no reason why this condition should exist, and the Editor, therefore, invites all telephone companies and the officials of such companies, to furnish any information that they can consistently make public relative to financial statistics, new construction, elections, franchises and personal items.

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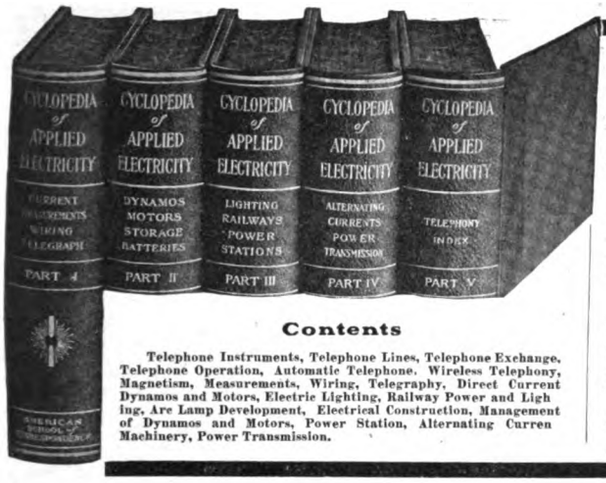

Contents

Telephone Instruments, Telephone Lines, Telephone Exchange, Telephone Operation, Automatic Telephone, Wireless Telephony, Magnetism, Measurements, Wiring, Telegraphy, Direct Current Dynamos and Motors, Electric Lighting, Railway Power and Lighting, Arc Lamp Development, Electrical Construction, Management of Dynamos and Motors, Power Station, Alternating Curren Machinery, Power Transmission.

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THE WEEK'S MESSAGES

McCall, vice president and manager; A. G. Anderson, secretary and treasurer.

HUTCHINSON, MINN.—The Hutchinson Telephone Exchange Company has elected the following officers: President, W. E. Harrington; vice president, W. E. Sivwright; treasurer, Wm. Davidson; secretary, H. L. Merrill; manager, W. S. Clay.

WHITE BEAR LAKE, MINN.—The following are the directors for the White Bear Lake Telephone Company: B. M. Teesem, Ole Ronnie, Hans Gerder, O. Baukol, C. Lingen, P. W. Sylvester and Andrew Anderson.

BEATRICE, NEB.—The German Mutual Telephone Company has elected H. Harms, president; F. Saeckel, secretary; David Bassing, treasurer.

LEBANON, N. J.—At the fourth annual meeting of the Lebanon Telephone Company the following officers and directors were elected: President, S. J. Shurts; vice-president, Geo. Clark; secretary, O. A. Farley; treasurer and manager, E. W. Sutton; directors, S. J. Shurts, H. H. Miller, J. E. Ramsey, George Clark, J. C. Farley, E. W. Sutton and O. A. Farley.

SAVANNAH, N. Y.—The following officers have been elected by the Savannah Telephone Company: President, E. P. Brown; vice president, Perry Morgan; secretary and treasurer, C. A. Coleman.

TONTOGANY, O.—The Tontogany Telephone Company, at a recent meeting, elected the following officers and directors: President, W. H. Hannah; vice president, Jacob Huffman; directors, Henry Hubner, Thomas Falsted and John Wenig.

PERSONAL.

B. H. BROOKS has recently gone to Detroit, Mich., to accept the position of chief engineer of the Electric Construction Company of St. Louis, Mo., in charge of the work of constructing and installing the new plant of the Home Telephone Company. After remaining in Dayton two years he went which the Interstate Telephone Company will operate.

Mr. Brooks during the past six years has been engaged as engineer on a variety of important work, having been in 1901 chief engineer of the Cuyahoga Telephone Company of Cleveland, from which place he went to Dayton, Ohio, to take charge of the construction of the plant of the Home Telephone Company. After remaining in Dayton two years he went to Columbus, Ohio, in March, 1904, as chief engineer of the plant of the Columbus Citizens' Telephone Company. At this place extensive additions to the cable plant, removal of the exchange from the old to the new building, and the cutting over from the manual to the automatic service took place under his direction. He left Columbus to take his present position in charge of the work at Detroit.

New Construction in the Field

BERKELEY, CAL.—The Home Telephone Company, which was recently granted a franchise at this city, is to begin the construction of its system.

POMONA, CAL.—Lines are being constructed by the Pomona Valley Telegraph & Telephone Company to Claremont, Chino and other places. Its system is also to be extended to San Dimas.

COEUR D'ALENE, IDAHO.—It is the intention of the Interstate Telephone Company to expend $30,000 in improving its system in this city.

NAMPA, IDAHO.—The Independent Telephone Company, of Boise, is extending its lines to Nampa, Caldwell, Payette, Weiser and Emmett.

AURORA, ILL.—A telephone line from Aurora to St. Paul is being constructed by the Chicago, Burlington and Quincy Railroad Company.

CAIRO, ILL.—A line from Thebes to Willard is being erected by the Thebes and Cairo Telephone Company.

LEXINGTON, ILL.—The Home Telephone Company contemplates the erection of additional lines to Hudson.

PEKIN, ILL.—The Citizens Telephone Company is overhauling its lines in Pekin.

BIPPUS, IND.—It is the intention of the Bippus Telephone Company to greatly enlarge its plant.

MADISON, IND.—The Madison Telephone Company is planning many improvements to its system.

BELLEVUE, IOWA.—It is the intention of the Bellevue Telephone Company to make many improvements in its plant.

DES MOINES, IOWA.—A new switchboard is to be installed by the Mutual Telephone Company in its east side exchange. Many other improvements and extensions in its system are also planned.

MT. PLEASANT, IOWA.—The lines of the Mt. Pleasant Telephone Company are being extended.

NORTH LIBERTY, IOWA.—The North Liberty Telephone Company is considering the advisability of building a line to Tigin.

STORY CITY, IA.—The Story City Telephone Company has installed a new switchboard and is making many other improvements in its system.

GARDEN CITY, KAN.—The Garden City Light, Telephone and Manufacturing Company is planning to extend its lines into Colorado, and it is estimated that between $20,000 and $30,000 will be spent on the contemplated improvements.

HOMESTEAD, KAS.—The lines of the Rural Telephone Company are to be extended to Burns.

FREDERICK, MD.—The Frederick County Telephone Company contemplates the establishment of an entire new exchange in the building it has recently purchased at Frederick.

ONTONAGON, MICH.—The Ontonagon Telephone Company expects to construct lines to Rockland.

JOPLIN, MO.—The plant of the Home Telephone Company, at Joplin, is being considerably enlarged.

SPEED, MO.—A number of new lines are to be constructed by the Speed Telephone Company.

HEMINGFORD, NEB.—A new exchange building is shortly to be erected by the Hemingford Telephone Company.

CHERRYVILLE, N. C.—The lines of the Piedmont Telephone and Telegraph Company are being rebuilt from Cherryville to Falston and Belwood The Bessemer City line is also to be improved.

CAMPBELL, N. Y.—A new line through Curtis Hollow is among the extensions planned by the Campbell and Risingville Telephone Company.

LITCHVILLE, N. D.—It is the intention of the Litchville Rural Telephone Company to extend its lines from Litchville and Marion into Stutsman and LaMoure counties.

ARCANUM, O.—The Home Telephone Company plans the installation of a new switchboard and many other improvements in its system.

ASHLAND, OHIO.—About $50,000 is to be expended by the Star Telephone Company in improving its system.

DAYTON, OHIO.—It is the intention of the Home Telephone Company, of Dayton, to expend about $200,000 in enlarging its plant.

LISBON, O.—The long distance lines of the United States Telephone Company out of Lisbon are to be rebuilt.

NEWARK, O.—Much new construction work is planned by the Newark Telephone Company.

NORWICH, OHIO.—Many new lines are being built by the Norwich Mutual Telephone Company.

BENTON, PA.—A new switchboard is to be installed by the Benton Rural Telephone Company.

BIRDSBORO, PA.—It is the intention of the Conestoga Telephone & Telegraph Company to construct another line to Birdsboro. It will start from Geigertown and run via Culptown.

CARLISLE, S. C.—The plant of the Carlisle Telephone Company is being greatly enlarged and improved.

LEWISBURG, TENN.—A new exchange building is to be erected by the Cornersville Telephone Company to take care of its increasing business.

LYNNVILE, TENN.—The Home Telephone Company, now building a trunk line from Louisville to New Orleans, has begun work on a line to Lynnville, Tenn., and will put in an exchange there. The poles are up from the junction of the through line at Waco to Lynnville, three miles.

BIG SPRINGS, TEXAS.—The Western Telephone Company has under construction a line from Big Springs to Merkel.

RUTLAND, VT.—The Vermont Home Telephone Company, which has acquired the franchise of the Home Telephone Company, is to install an exchange at Rutland.

OAKFIELD, WIS.—Lines are to be built in Oakfield by the Lamartine and Rock River Telephone Company.

SUNNYSIDE, WASH.—Improvements in its system are being made by the Yakima Valley Telephone Company.

KENOSHA, WIS.—It is the intention of the Independent Telephone Company at Kenosha to build additional lines and otherwise improve its system.

RIPON, WIS.—The Ripon Mutual Telephone Company, recently incorporated with a capital stock of $10,000, is to not only build lines in Ripon, but lines will also be built in all directions from the city into the surrounding country.

LARAMIE, WYO.—R. D. Stewart contemplates the erection of a telephone line from Laramie Plains and Centennial.

BARRIE, ONT., CAN.—The council has asked the Ontario government for information regarding the construction of a municipal telephone system. Address J. H. Bennett, Mayor.

EMO, ONT., CAN.—The plant of the Rainy River International Telephone Company is to be completely overhauled at Emo.

SOUTHWOLD, ONT., CAN.—New lines are being built by the Southwold & Dunwich Telephone Company.

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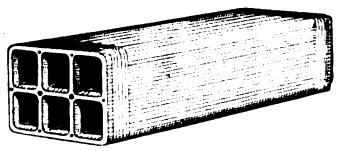
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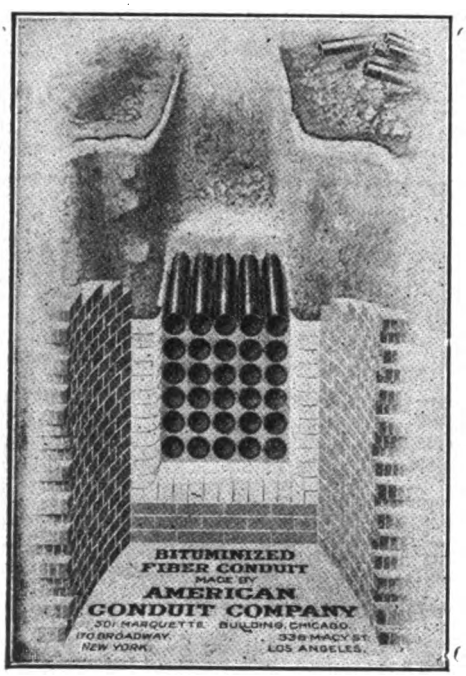

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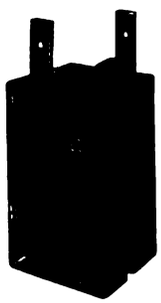

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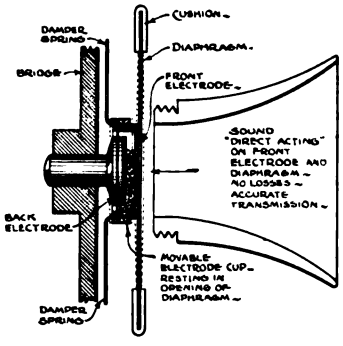
DEAN TELEPHONE APPARATUS

The Vital Parts of Telephone Equipment

Transmitters and Receivers

The talking and receiving parts of the telephone are its life blood. All other parts of telephone equipment are for convenience of switching and calling.



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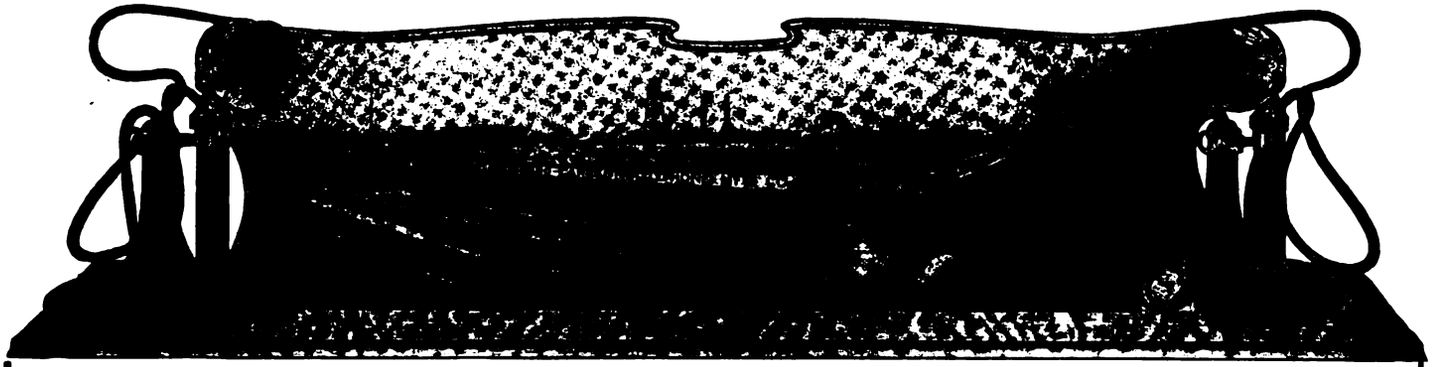
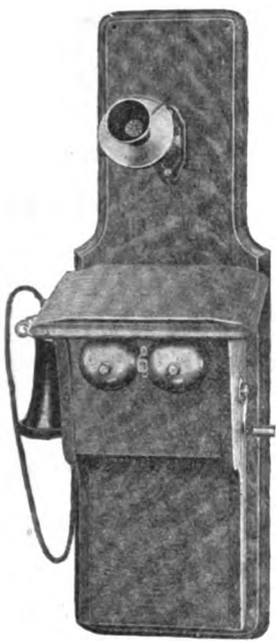


BRIDGING TELEPHONES



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INDUCTION COIL MOUNTING: Simple self-fastening mounting, permitting coil to be removed at will without use of screw-driver.

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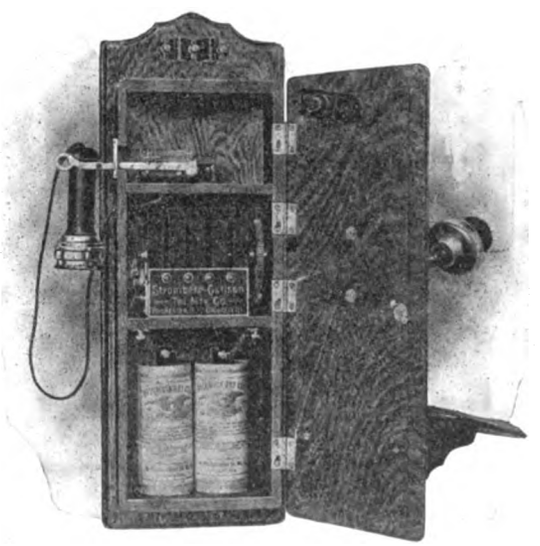

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WHERE OTHER "GOOD PHONES"
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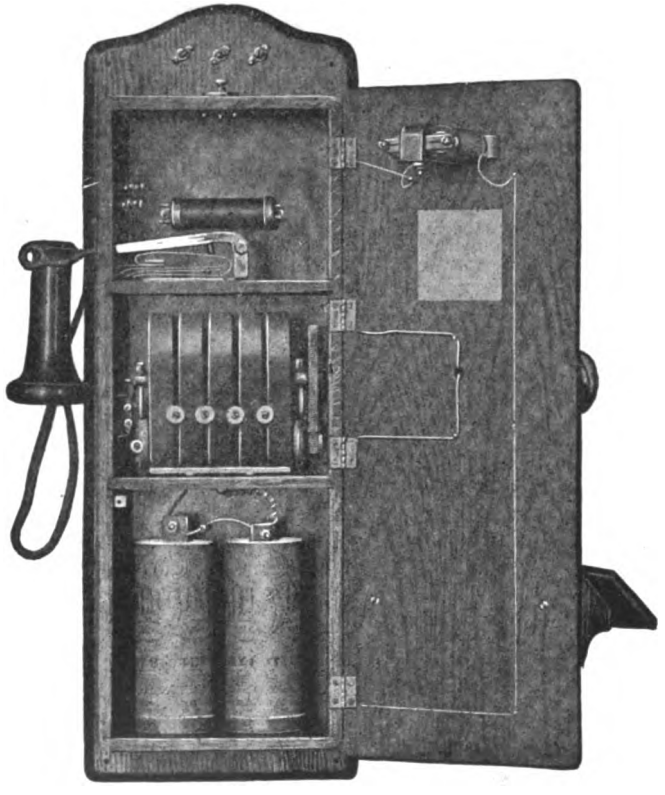

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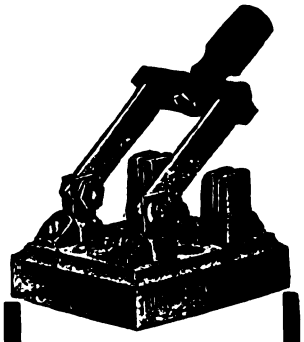

RECESSES

IN THE BASES HOLD CLIPS FIRMLY AND KEEP THE ALIGNMENT.

CLIPS

ON ACCOUNT OF THEIR PECULIAR DESIGN, THEY SPRING TOWARD THE BLADE AND MAKE A PERFECT SELF ADJUSTING CONTACT.

WRITE FOR SAMPLE.

THE TRUMBULL ELECTRIC MFG. CO.
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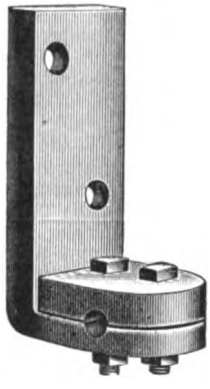

"L" Messenger Brackets
Guy and Anchor Rods

Pole line hardware of all kinds; if you have any special design which you require, we can make it for you.

HALLETT IRON WORKS
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ORANGEBURG
Fibre Conduit
FOR UNDERGROUND SYSTEMS
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100% GOOD

Our long experience in manufacturing telephone apparatus all 100% good—

And what we have learned in operating the sixty exchanges of the Inter-Ocean system with their thousands of subscribers and thousands of miles of long distance lines—

And our new factory equipped and manned for serving the Independent Telephone interests—

Are three helps to us in meeting the expectations of our friends.

CENTURY TELEPHONE CONSTRUCTION CO.
BUFFALO, N.Y., U.S.A.

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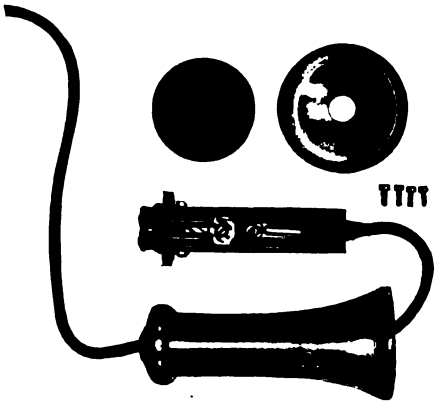
TELEPHONE APPARATUS

KELLOGG COMPACT DRY CELL TYPE TELEPHONES

CONTAIN THE KELLOGG RECEIVER



The Kellogg receiver No. 18-A has the highest electrical and acoustic efficiency and the best mechanical design, eliminating practically all chances for ordinary trouble, and producing durability and lasting neatness. It contains a 2-Bar Magnet, composition bridge, cord tips fastening in binding posts, all securely fastened together and permanently adjusted in a highly polished hard-rubber shell. All parts of the core, although securely fastened, are very accessible, should it become necessary at any time to replace any part.

Let our Department A furnish you with Bulletins and price on Magneto Apparatus. We solicit your correspondence.

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Do Not Because They Cannot Buckle

General Storage Battery Co.

General Offices
42 BROADWAY, N. Y.
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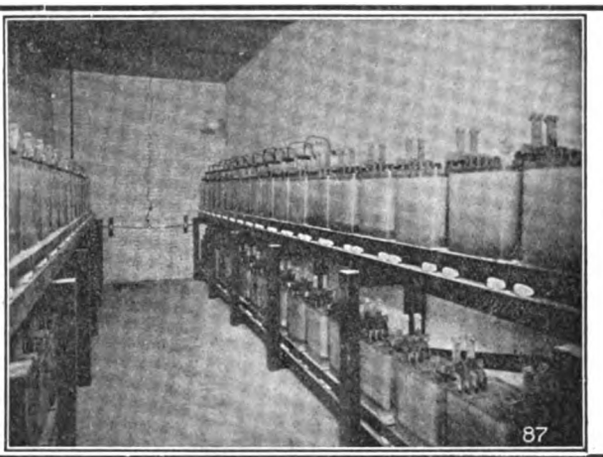

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[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE
United States Coin Register Co.
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ROBINSON DISTRIBUTION RACK

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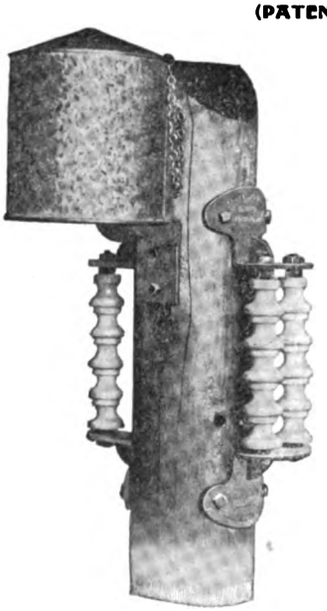

This cut shows the ROBINSON RACK as used in connection with Can Top. Its extreme flexibility makes the Robinson Rack a most desirable method for distribution. No waste of insulation. Costs 50 per cent less than circle top. Easy to trace circuits. Can distribute five pairs from one side of pole; ten pairs from opposite side. Notice special drip feature.

Let us send you circulars and prices.

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The W. G. Nagel Electric Co.
26-30 ST. CLAIR ST., TOLEDO, OHIO

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AS AN INVESTMENT

there's nothing more safe, more sure, more profitable—in the telephone business—than the securities of an Independent telephone company operating our AUTOMATIC TELEPHONE SYSTEM—

BECAUSE it gives more service, better service, prompter service, more accurate service than a manual system (and also an absolutely secret service, which no manual system can give) and

BECAUSE it costs less to operate, less to maintain, less to enlarge than a manual system, or

TO SUM IT ALL UP, the AUTOMATIC TELEPHONE SYSTEM produces a better telephone service, commanding a higher price, at less cost than inferior service can be produced for by a manual system.

THAT IS THE REASON WHY the AUTOMATIC TELEPHONE SYSTEM makes the securities of the company using it safe, stable and profitable, and why it has been adopted by the Independent telephone companies in the following cities:

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Akron, Ohio.
Allentown, Pa.
Auburn, Me.
Auburn, N. Y.
Battle Creek, Mich.
Beaver Falls, Pa.
Bellingham, Wash.
Butte, Mont.
Cadillac, Mich.
Champaign, Ill.
Chicago, Ill.
Cleburne, Texas.
Columbus, Ga.
Columbus, Ohio.
Dayton, Ohio.
Denver, Colo.
El Paso, Texas.
Emaus, Pa.
Fall River, Mass.
Grand Rapids, Mich.
Hastings, Neb.
Havana, Cuba.
Hazleton, Pa.
Holland, Mich.
Hopkinsville, Ky.
Jonesboro, Ark.
Lake Benton, Minn.
Lewiston, Me.
Lincoln, Neb.
Los Angeles, Cal.
Manchester, Iowa.
Marianao, Cuba.
Marion, Ind.
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Mt. Olive, Ill.
New Bedford, Mass.
Oakland, Cal.
Ocean Park, Cal.
Omaha, Neb.
Pentwater, Mich.
Portland, Me.
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Urbana, Illinois.
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AUTOMATIC ELECTRIC CO.

Van Buren and Morgan Sts., Chicago, U. S. A.

Talks With The Buyer—No. 6

I want to digress from my "Talks" on our telephone apparatus and its particular adaptability to your requirements long enough to call your attention to another of our special price offerings.

We had designed and made for us a very large number of especially attractive

New Pay Station Signs

These signs are beautifully enameled on heavy gauge steel in red, white and blue lasting colors. The design appears on both sides. Flanged for support. These signs have been adopted by the International Telephone Association. They are better than any other sign which has ever been offered the telephone trade, both in the quality of the sign and the fact that on the 18 x 19½ size the words "Telephone Pay Station" appears; not shown on any other such sign. I wish it were possible for me to show you here a cut of the three-color signs, but I am mailing you illustrations direct, and assure you that they are especially seasonable offering at the following prices:

No. 10—18 x 19½ size.		No. 12—8 x 18 size.	
Lots of 5	$1.00	Lots of 5	$0.65
" " 15	.90	" " 15	.60
" " 25	.85	" " 25	.54
" " 50	.80	" " 50	.50
" " 100	.70	" " 100	.45

The signs on which I am quoting must not be confused with the cheaper signs frequently offered the telephone trade. This is the time of year to put out your signs. Send us your orders for immediate shipment. Delivery F. O. B. St. Louis, Dallas or Chicago.

THE SALES MANAGER.

CENTRAL TELEPHONE & ELECTRIC CO., Makers of High Grade Apparatus Dealers in Telephone Supplies **St. Louis AND Dallas, U. S. A.**

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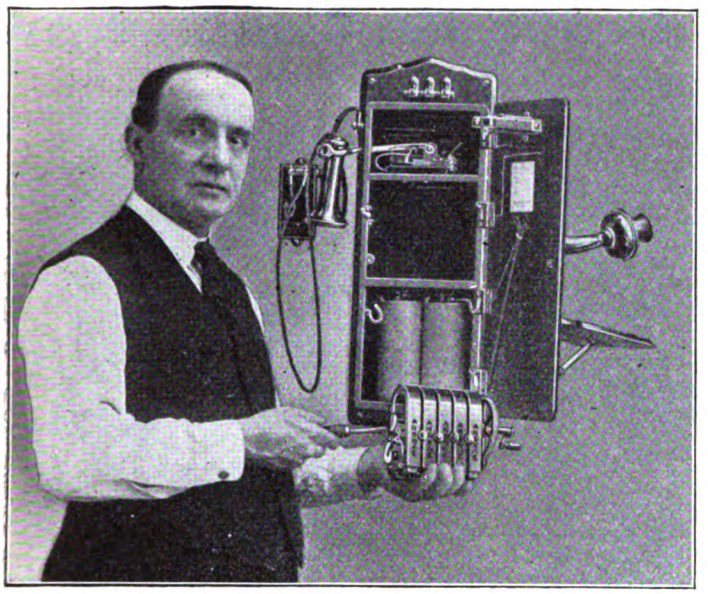
ANDRAE



No Trick At All.

Talks With the Trouble Man

Did you ever examine 10 or 12 generators, each of different make, that have seen 4 or 5 years' service?

At first glance they will look very much alike, but on closer inspection you will discover much difference in their mechanical construction. Some will run perfectly true. Every part will be firmly and substantially in position, and the generator will have a business-like appearance throughout. Others will be weak, wabbly and dilapidated.

Some will show practically no magnetism. This means cheap magnet steel. Others give very feeble current, due to errors in construction, poor contacts on the shunt springs, worn-out insulation or any one of a number of defects.

If one of these instruments happens to be an "ANDRAE," even if it is the oldest in the bunch, you will find it running in perfect condition, giving the same strong, steady-ringing current that it did the day it left the factory. This comes from careful construction, high grade imported steel magnets, positive shunt springs, with perfect connections, good insulation and no sharp corners to cut it; all of the little things that cost money and *cannot therefore be put into cheap telephones.*

I have tested a great many generators, but have not found one that gives the good, honest, rough and tumble wear and tear, long life and power of the "ANDRAE GIANT." All the parts of the Special Heavy Giant Bridging telephones are made on the same scale. You can depend on them to-day, to-morrow, next week, next year and years and years to come.

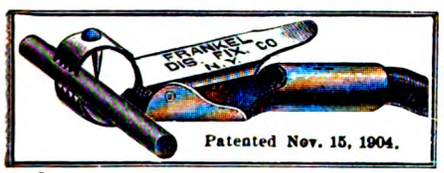
CONDENSERS

You will notice I still have a condenser attached to my instrument. I told you a little about this last month. If I could not get another, money would not buy this one. You people who are operating party lines without condensers, and wearing your lives out trying to chase up ringing troubles, don't know what you are missing. The sooner you get a few condensers on your party lines the happier you will be. If you are thinking of doing it to-morrow, do it to-day. It costs absolutely nothing to try them. Prices: No. 300, 85c. each. Lots of 50, 10c. discount. No. 301, 90c. each. Lots of 100, 15c. discount.

JULIUS ANDRAE & SONS CO.,

Write for Cat. No. 11 and No. 24
99 W. WATER STREET

MILWAUKEE



Patented Nov. 15, 1904.

Sample Doz...$1.50 Dozen
Lots of 100...11.00 Hundred
Lots of 500...10.00 Hundred
Lots of 1,000. 9.00 Hundred

Your Supply House carries them. If not order direct.

FRANKEL'S TESTING CLIPS

For testing Insulated or Bare Wire Lines.
Save 15 to 30 Minutes on every Test.
Unnecessary to "skin" the wire.
Obviate "breaks" and use of Tape.

Get them for your Inspectors, Linemen and Installers.

THEY SAVE MONEY

FRANKEL DISPLAY FIXTURE CO., 740-742 Broadway, N. Y.

Don't Use Two Pounds of Wire Solder

FOR TELEPHONE SOLDERING THAT CAN BE DONE BETTER AND QUICKER WITH ONE POUND OF

Belden Rosin Core Solder

WITH OUR SOLDER YOU CAN ELIMINATE CORROSION AND DO NEATER WORK. SAMPLES AND PRICES ON APPLICATION.

Send for Belden Catalog of Wire Cords, Sleeving and Solder

BELDEN MANUFACTURING COMPANY

194 MICHIGAN STREET, CHICAGO

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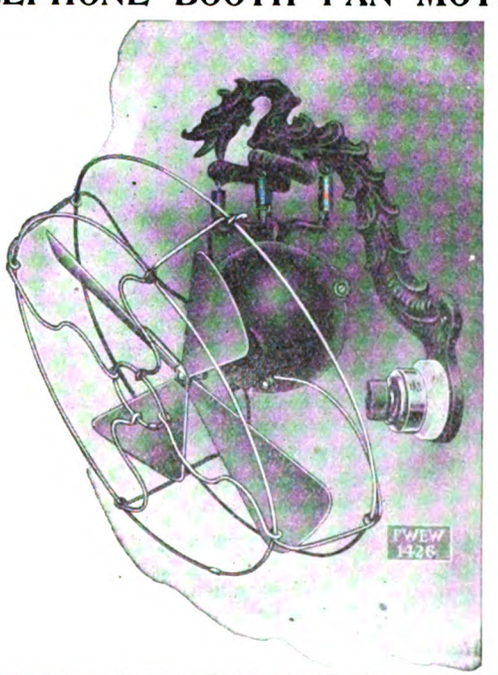
"Wood" Systems

TELEPHONE BOOTH FAN MOTORS



554

The right fan motor for the place. Our Telephone Booth Fan Motors are not "hummers." It's because they are not, that they are specified for telephone booths. Ask for our booklet "Summer Comforts."

Main Office

Other Sales Offices — FORT WAYNE, IND.— in Most Large Cities

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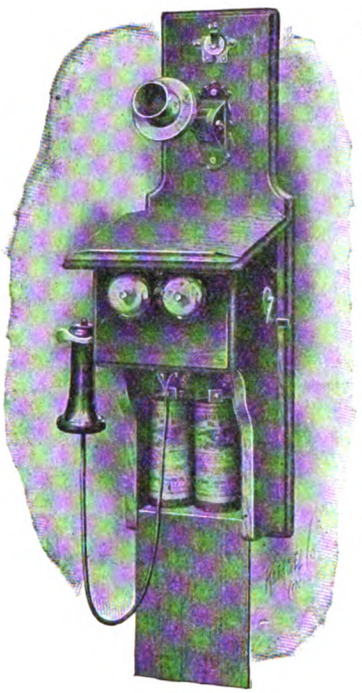
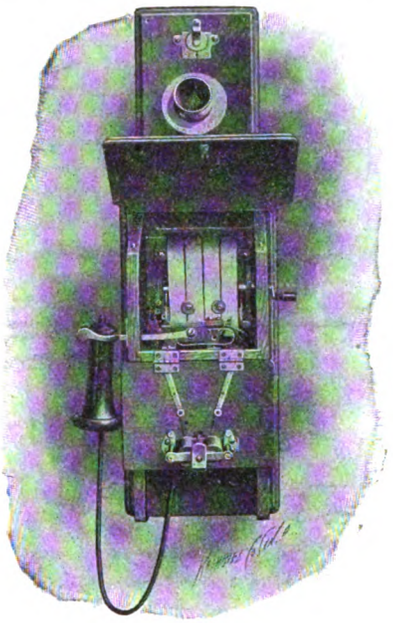
COMMON BATTERY TYPE CABINET MAGNETO PHONES

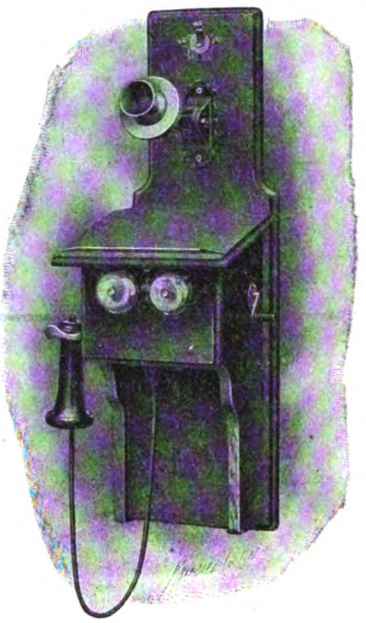
Sumter Standard Parts—with a few useful features the other fellow hasn't got yet



GET BULLETIN 41



WRITE TODAY



1907 MODEL

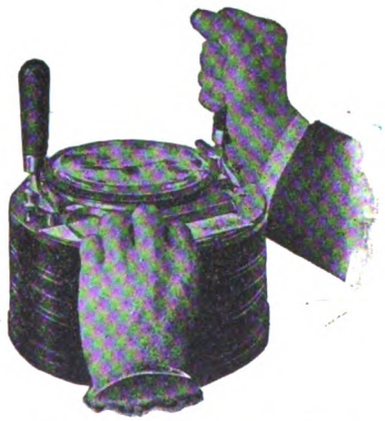
THE SUMTER TELEPHONE MFG. CO. ... SUMTER, S. C.

REASONS WHY

YOU SHOULD INSTALL

THE CALCULAGRAPH

No. 12



IT IS ECONOMICAL

Because it is not complicated and requires no expensive renewals. It is so well designed and so strongly constructed that its maintenance is trifling even when subjected to the roughest usage. The Calculagraph will last a lifetime.

It Makes No Clerical Errors **Ask for Catalog**

CALCULAGRAPH CO.

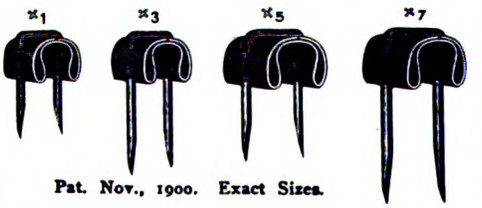
1437 Jewelers Building **New York City**

Agents for Canada: Northern Electric and Manufacturing Co., Ltd., Montreal.

NO STICKY DAUBY TOOLS

This is good news for the repair man. The Blake Tube Flux can be carried in his tool kit without getting the flux smeared all over his tools and making a mess generally. The aluminum spout allows him to get the flux just where needed without dropping it where not wanted. Trial tube, postpaid, 20 cents. Get one.

BLAKE INSULATED STAPLES



Pat. Nov., 1900. Exact Sizes.

Can be driven over two or more wires without danger of causing a ground or cross. Bare metal does not come in contact with the wires. The only practical staple on the market and the best for every purpose.

A POSTAL WILL BRING SAMPLES

BLAKE SIGNAL AND MANUFACTURING CO.

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The American Telephone Journal

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VOLUME XV. SATURDAY, APRIL 6, 1907. NUMBER 14

A Meeting of Wisconsin Independents

THE annual convention of the Wisconsin Independent telephone men was called to order at Madison early in March. This convention was for the continuation of proceedings begun at the January meeting, which was adjourned to await the completion of district organizations. Reports from the presidents of the different district associations were presented as soon as President Valentine had called the delegates to order.

Mr. Mohlenpah, president of the first district, reported a meeting of fifteen companies having been held at Janesville. Delegates were present representing 700 telephones, outside of Racine, in the first district. They organized with by-laws similar to those of Indiana District Associations, with some changes. They will continue to work on the map and statistics, which are now well under way. A committee on toll line connections was appointed, and Mr. F. C. Grant, of Janesville, was elected secretary and treasurer.

Mr. John S. Donald, president of the second district, reported on the same lines. His district represents fourteen companies with 27,500 telephones. Their organization was completed on March 7th, and the map committee has already nearly completed its work. Good feeling prevailed and a large and growing interest is shown in favor of Independent lines by the people in general throughout the district.

Mr. W. L. Burch announced he was the only one present at a district meeting called for the third district and he affiliated with the second district. He stated that the third district should combine with the second and seventh districts for practical reasons.

A Group of Members of the Wisconsin Independent Telephone Association at the Recent Convention.

Mr. E. J. Kneen, president of the seventh district, reported that its organization was perfected on March 7th; members are enthusiastic and well organized. They represent over seven thousand telephones.

Capt. John M. Baer reported for the ninth district that a meeting which was called for February 18 and 19 was adjourned to meet on March 12, on account of sickness and for business reasons. Capt. Baer reported the addition of the Waupaca exchange to his district by purchase by the Appleton company, and that he was preparing a map of the territory in the district.

Mr. E. I. Bates reported for the tenth district that a meeting had been held at which five companies were represented; by-laws were adopted, and the district permanently organized; 3,025 Independent telephones were represented in the district and conditions will be much improved. Members are preparing maps and statistics, and twelve to fifteen companies were reported ready to join the district association.

President Valentine announced that on account of illness Mr. H. D. Critchfield was unable to be present, but Mr. Chapin, of Milwaukee, a director of the Milwaukee Independent Telephone Company, was present to represent him. Mr. Chapin reported the excellent progress of the Milwaukee Independent Telephone Company's preliminary work. Through the aid of solicitors 5,200 contracts have already been obtained for telephone service, and 2,700,000 feet of conduit have been ordered shipped to Milwaukee, so that construction will begin as soon as it is physically possible.

Mr. W. J. Stadelman, the traveling secretary of the International Independent Telephone Association of America, was present and addressed the convention, giving much useful information, which was received with enthusiasm.

President Valentine then announced that proposed legislation demanded the attention of the Association. Mr. J. C. Crowley, Jr., moved that a committee of three be appointed to draft specifications covering the crossing of wire over railroad crossings (the purpose to govern the members of this Association in the construction of such lines), and that this committee be instructed to confer with the other interested persons in the matter and report on the following day. The motion was carried and the president appointed Mr. Crowley, Mr. Harper and Mr. Teasdale.

Mr. Harper moved that a committee be appointed, consisting of one from each district, to meet in the evening and arrange a uniform set of district by-laws. The president appointed on this committee Messrs. Grant, Donald, Schweizer, Crowley and Bates.

The evening meeting for the discussion of legislation was called to order by President Valentine, and a permanent committee on legislation was then appointed by the chair, with power to act. Messrs. F. C. Grant, J. C. Harper, Richard Valentine, R.

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S. Donald and C. H. Schweizer are the members of this committee.

It was moved and seconded that Bill 205A, regarding the setting of poles, be referred to the legislative committee; also that Bill 298A, regarding the granting of franchises, with Bill 506A, regarding the taxing of property not used exclusively for telephone purposes, and that Bill 666A, regarding the stringing of wires and cables over private property, all be referred to the legislative committee for such action as might be necessary.

J. C. Crowley, Jr., the Newly Elected Secretary of the Wisconsin Association.

Other bills were discussed, after which the meeting was adjourned to the following day.

At the opening of the second day's session Mr. Schweizer moved that those companies represented at this meeting leave maps and data with the secretary for the use of the Milwaukee Company, and that the Milwaukee Company be asked for assurances of their immediate construction of their lines.

The committee on specifications for wires across railroads then reported recommendations by Mr. Teasdale as follows, which were adopted:

SPECIFICATIONS FOR CONSTRUCTION OF SPAN OF POLE LINE CROSSING ANY RAILROAD.

Poles.—The pole on each side of the right-of-way shall be firmly set and the two poles shall not be placed more than 125 feet apart; in case the right-of-way shall be of a greater width than 125 feet, poles shall be placed upon the right-of-way at such distance as shall not exceed the span of 125 feet.

Brackets.—Upon a pole line carrying two wires or less, a bracket may be securely fastened to the pole upon each side thereof.

Cross-arms.—Upon each pole line carrying more than two wires a standard telephone cross-arm and pins shall be securely placed upon each side of said pole, and the cross-arms shall be securely bolted together at each end.

Wires.—Each span of wire crossing the railroad shall be at least 25 feet above the top of each rail and each wire shall be securely fastened to its line insulators with tie-wires upon each double bracket or double cross-arm.

Guard Wire.—There shall also be placed a guard wire, No. 8 in size or larger, running from one end of the cross-arm over the entire lead of wires to the other end of the same cross-arm.

Mr. Donald reported for the nomination committee recommending the election of the following named gentlemen as officers of this Association for the ensuing year: President, H. D. Critchfield, Milwaukee; vice-presidents, the presidents of the district associations; secretary, J. C. Crowley, Jr., Superior; treasurer, J. S. Donald, Mt. Horeb.

The names proposed for the executive committee are: The president and secretary, ex-officio; John M. Baer, Appleton; Richard Valentine, Jr., Janesville; J. C. Harper, Madison; Dr. G. N. Hidershide, Arcadia; H. Teasdale, Sparta; Wm. Van Middleworth, Racine; W. P. Hyland, Ashland.

The election of officers aroused considerable enthusiasm, as it is looked upon as the first step toward the building up of a strong State organization which will insure a more uniform development, and closer co-operation between the existing companies. The position occupied by President Critchfield as head of the company at Milwaukee, as well as of the long distance company, makes it certain that his relations with the other members will be particularly close, so that his election gave much satisfaction. Mr. Crowley, the newly elected secretary, although a young man, has had particularly valuable telephone experience. He was with the Chicago Telephone Company from the spring of 1891 until the fall of 1894, at which time he entered the Independent field. At first he worked with his father, J. C. Crowley, Sr., who constructed the exchanges at Bloomington, Ill.; Chester, Ill.; Grand Rapids, Mich., and Charleston, S. C. In the spring of 1898 Mr. Crowley was employed by Mr. J. E. Keelyn and Mr. L. S. Tainter to look after the interests of the Wisconsin Valley Telephone Co. in Eau Claire, Wis. In 1900 he decided to move to the head of the lakes, at Superior, Wis., where he was employed by the People's Telephone Co., with which company he now holds the position of manager. Mr. Crowley has recently remodeled the entire plant, making it one of the best exchanges in the Northwest.

Committees on by-laws for the State and district associations, after the election of officers made reports which were accepted, and copies of the by-laws will soon be in the hands of members.

A resolution was adopted amending Article 7 of the by-laws by adding:

"Any individual member of an Independent operating company may become a member of the Association in the same manner as specified above, and by paying a membership fee of one dollar, and one dollar per year dues."

The secretary was then instructed to cast the ballot for a number of applications for membership in the association, and the following were duly elected members: The Milwaukee Independent Telephone Co., Milwaukee; People's Telephone Company, Superior; Pine Bluff Telephone Company, Riley; Mt. Vernon Telephone Company, Mt. Vernon; E. J. Bates, Chippewa Falls; J. C. Crowley, Jr., Superior; W. P. Hyland, Ashland; L. Richardson, Chippewa Falls; Dr. Geo. W. Hidershide, Arcadia; B. J. Anderson, Sun Prairie; H. Teasdale, Sparta; W. H. Burk, Sheboygan; Geo. Byer, Westby; W. J. Stadelman, Sioux City, Iowa.

Among the resolutions presented and adopted are the following:

Resolved by this Association, that it respectfully requests the

Capt. J. M. Baer. | Richard Valentine, Outgoing President. | W. J. Stadelman, Traveling Secretary, International Association. | W. F. Goodrich, Outgoing Secretary.

A Group of Wisconsin Boosters.

Independent Long Distance Telephone Company, now incorporated, to proceed at once with the preliminary work for the immediate installing of first-class toll lines connecting up the different Independent telephoen companies, representing more than 60,000 telephones.

Whereas, It has been reported that the Great Northern Rail-

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road Company is discriminating against Independent telephone interests in Wisconsin, Minnesota and points along their system and that such discrimination is unfair, unjust and detrimental to Independent telephone interests of the United States, therefore be it

Resolved, That we protest against such discrimination and be it further

Resolved, That a copy of this resolution be furnished to the Independent telephone journals, the Independent Telephone Association of the United States, the manufacturers of Independent telephone apparatus, appurtenances and supplies, and that the said associations and manufacturers be appealed to to use their influence with said Great Northern Railroad Company to the end that they cease this discrimination, and be it further

Resolved, That a copy of this resolution be sent to the Railroad Commissioner of the States of Wisconsin and Minnesota, to Mr. J. J. Hill and to Mr. L. J. Hill of the Great Northern Railway Company.

It was then moved and carried that an assessment of one cent per unit be assessed against each company to carry on the work of the association.

Mr. W. J. Stanton, of Waterloo, Iowa, superintendent of the Corn Belt Telephone Company, addressed the convention on the subject of the Iowa Clearing House.

W. F. Goodrich was appointed trustee for the fund specified at the January meeting as an organization fund.

Mr. J. J. Nate addressed the convention on the affairs of the United States Independent Telephone Company, which are at present of much interest.

A resolution was presented thanking the retiring president and secretary for the valuable work done by them in faithfully performing their duties, and especially to thank President Valentine for his many years of service in the office of president, and this resolution was adopted by a rising vote.

A unanimous vote of thanks was also tendered to Mr. Harper for the faithful work performed by him for the Association. A vote of thanks was also tendered Mr. Harper and the Madison people for the success of this convention. Mr. Valentine then closed the convention, assured that his active work as president of the Association had not ceased until the members were prepared to carry their work to the full measure of success which seems now to be so definitely probable when the new toll lines are built.

Getting Business

By Charles H. Hood,

General Contract Agent, Home Telephone Co., Detroit, Mich.

TELEPHONE work may be disagreeable at times, but it is fascinating. The solicitor deals with every known business and residence on the globe. It requires a rare combination of qualities to bring success in this work, and the writer finds that of all the salesmen that apply for positions as solicitors, only one man in twenty can sell telephones. A successful solicitor must have backbone—a great many have wishbone where the backbone ought to be. He must be energetic, have tact, be a student of human nature and understand his part of the telephone business thoroughly. In this connection I want to say that to keep in touch with the times and up to date it is imperative that every solicitor and every employe of a telephone company or corporation should subscribe for one or more good telephone magazines. This advice is not directed to the practical men, for I cannot recall one that does not subscribe. The best solicitors we have ever employed have been devoted to their magazines. In no other way can a man or woman, in practical work or out of it, keep in touch with the rapidly advancing ideas of telephony. All of our solicitors in Detroit are subscribers to telephone magazines. I know that it helps them in "getting business," for in this line of work it is necessary to talk to get results and you cannot secure satisfactory results unless you are posted in every detail. I do not make this statement to boost the publishers, but I honestly believe that it adds a vast amount of ginger and ambition and I know that if every stockholder was a subscriber he would be a better worker.

Every company should exercise great care in selecting employes who are liable to meet and come in contact with the subscribers. They should be uniformly courteous and carry out their instructions in a pleasant and agreeable manner. Employers often spend thousands of dollars to influence the public in taking their service and are losing them through some other channel. A discourteous employe should never be tolerated. I admit there are times when we come close to the precipice, but it does no good to go over and it may hurt. I believe that every complaint should receive a personal call. A satisfied subscriber is a big asset to us and a large liability to our opponent. Harmony between the company and the public will bring great results. There are many methods of "getting business," but they are all subservient to a good solicitor. Judicious advertising is a great help to the canvasser, but with all the advertising we have done, you will remember how few came to the office to sign for a telephone. Still we believe in advertising.

I will cite a few methods used in our recent canvass in Detroit which has secured us 10,173 contracts up to February 23. Each contract is verified by mail and by a personal call. In the first place we educate our men in the art of selling telephones, for we realize that an inexperienced man will spoil twice as many as he will secure. We familiarize them with the local condition from the incorporation of the Bell Company in 1883 to date, and there is considerable local history in Detroit, as is well known.

First: The city was laid out in 21 districts and a man assigned to each one and a thorough canvass made from business to business and from house to house. This first canvass secured us 3,386 contracts.

Second: We changed all of the men to new districts and had them turn over all prospects to the succeeding solicitor in that territory. This was done by a book form of reports made in suitable size for the pocket that covered that district.

Third: We called all of the men off the field and gave each one a certain class to call on, such as clergymen, physicians, attorneys, contractors, druggists, grocers, etc.

Fourth: We gave each man a number of streets and a list of the parties that had signed on those particular streets.

Fifth: We turned them loose, go as you please, for a couple of weeks. This plan is capable of bringing in a great amount of business for a short time, but if persisted in will discourage the solicitor and subscriber. A couple of weeks on rare occasions in a large town will do no harm, for I find that they are glad to be confined to their territories after a campaign of this kind. I could go further with you in regard to the Detroit canvass, and many others, but I do not wish to tire you with detail. With an operating company there are more and varied methods in "getting business," but different conditions and districts require different methods and I hope to go into this more fully at some future time.

To show that we have the interests of outside companies as well as ours in mind, we compile lists of lost calls and calls to those who have not subscribed from our long distance tickets and use every effort to induce them to subscribe. I earnestly wish that the companies that are safely entrenched and enjoying quarterly dividends would take a friendlier interest and boost the smaller companies that have to dig down in their pockets

* Abstract from a Paper read at the Recent Michigan Convention.

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each year. If they are not aided financially at least by "stretching a point" one may build three-quarters of the way to reach them if they can only build one-quarter. This is generally done or we would not have the magnificent system that we have, but it is human to forget when success is coming our way. We have adopted a method that has been in vogue for several years, and that is, to have slips printed twice a month on pay days and enclose in each employee's envelope, asking them to boost for the Contract Department where they spend their money and give us all the prospects they can.

A prospective subscriber or what we term a prospect is one who can afford telephone service and has none, and he remains on our list as a prospect until he leaves the city, dies or signs for a telephone. Tuesdays and Thursdays of each week we have a solicitors' meeting. At these meetings we discuss Bell methods and rates, the inadvisability of knocking your opponent, except as a matter of protection, merits of one system over another, class of service, equipment, composite circuits, etc. These meetings are beneficial to the men and to the company. It is a good plan to keep in touch with the solicitors personally and have each man make his report in presence of the others. A little jolly and encouragement for the successful ones seems to spur them all on to greater effort and promotes rivalry for the best results. Solicitors to be successful must be kept enthused. We instruct our men to study the requirements of subscribers and never try to induce anyone to take service which his business will not warrant or he cannot afford. It is a good idea for the Contract Agent in charge to canvass occasionally in the different districts to keep in touch with the people and their wants and in this way know the conditions that have to be met by the men. The Contract Agent should cultivate the friendship of the press, should belong to the Business Men's Association and most of the social clubs, for in no better way can he come in personal contact with the heads of the larger concerns with whom it is necessary "sooner or later" to adjust some matter of importance. To be successful, in "getting business" be thorough, be persistent. Of all the positive qualities of success *persistency* ranks the highest, for no real success has ever been attained without it. There is no successful business that was not built by persistency. Persistency has been the slogan of the Independents and see what they have accomplished.

Josh Billings expressed a very good thought in his advice to his son, which was "Konsider the postage stamp, my son, its usefulness konsists in its ability to stick to one thing until it gets there." Persistency acquires all things. By persistency the mouse gnawed in two the cable, and not only severed the cable, but accomplished a result, as many more and vastly more important results have been accomplished—by persistency. I intended to hang up the receiver at this point, but before I do I will repeat a few lines which I read recently:

"Genius, that power that dazzles mortal eyes,
Is oft but perseverance in disguise.
Continuous effort of itself implies,
In spite of countless falls, the power to rise.
'Twixt failure and success, the point so fine
Men sometimes know not when they touch the line.
Just where the pearl was waiting one more plunge,
How many a struggler has thrown up the sponge!
As the tide goes clear out, it comes clear in,
In business 'tis at times the wisest win.
And Oh! how true when clouds of doubt dismay
'Tis often darkest just before the day.
A little more persistence, courage, vim,
Success will dawn o'er fortune's golden rim.
Then take the honey for your bitterest cup,
There is no failure save in giving up.
No real fall as long as one still tries,
For seeming set-backs make the strong man wise.
There is no defeat in truth save from within,
Unless you are beaten there, you're bound to win."

Independent Company Gets Charter at Nashville

THE telephone muddle in Tennessee has reached monster proportions, with many new and interesting features. Briefly told, the situation is this:

The Home Telephone Company attempted to enter Nashville to compete with the Cumberland company, but the city council refused it a franchise. The Home company then undertook to build its lines and operate under a State law under date of 1878, which provided that a telegraph company could operate throughout the State without the authority of a city or county, and claiming to be a telegraph as well as telephone company the Home company began its work. The city council sent men out to destroy the work, whereupon the company secured an injunction against the city in the lower court. The case went to the Chancery court and the injunction was dissolved. On appeal to the Court of Appeals the company's contentions were sustained and the city enjoined from interference with the company's work. The city appealed to the Supreme Court, which decided for the city on the ground that no telephone company had ever been given authority to organize in Tennessee. Just a few days prior to this decision the Legislature passed what is known as the Talbert Bill, which gave telephone companies, as public service corporations, the right to organize, build lines and exchanges and operate in any town or city without the consent of the city. Under this law all the telephone companies in the state are re-incorporating.

Following this new law and the decision of the Supreme Court, W. B. Marr and J. B. Jones, of Nashville, the former being a member of the House of Representatives, filed an injunction suit restraining the Secretary of State from granting a charter to the Home Telephone Company on the ground that the recent law passed by the legislature was unconstitutional and passed in the interest of a certain company.

The grounds on which the new law was attacked are the following:

1. Because the Legislature has no right or power to deprive a local municipality of the right of self-government with respect to matters purely local, such as control of its streets, etc.

2. Because the control of the streets of the city was by charter vested exclusively in the city, and its charter cannot be interfered with or destroyed except by an act repealing or amending it. Further, that such control cannot be legally destroyed or affected by an act dealing alone with a form for a charter for telephone or telegraph companies.

3. That the act undertakes to give telephone or telegraph companies rights on the streets of the city without the consent of the city or its citizens, without giving the same right to other public service companies.

4. Because the bill undertakes to give telephone or telegraph companies perpetual franchises on the streets of the cities of the State without the consent of the municipal authorities, and for that reason is repugnant to the Constitution, which opposes perpetuities.

5. Because the act is void on account of having three separate and distinct subjects embraced in it; in that it contains a form for a charter for telegraph and telephone companies; it undertakes to fix rentals and give cities rights to regulate rates; and because it deprives municipalities of the right to say whether or not they want one, two or one hundred telephone companies on their streets.

6. Because the bill seeks to prevent municipalities from obtaining or even asking reasonable compensation for the right, franchise or license of telephone or telegraph companies to enter upon its streets and transact business in the city.

7. Because the act is void in not indicating in its caption the subject matter contained in the bill in that it only purports to amend a general incorporation law and gives no indication of the broad and sweeping power sought to give telephone and telegraph companies, and gives no indications of the restrictions imposed on municipalities of the destruction of the rights of the people.

Judge Allison of the Chancery Court on April 3 held the new telephone law to be constitutional, and refused to grant the in-

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junction restraining the Secretary of State from granting a charter to the Home company under the provisions of the new law. To complete the bitter disappointment to the Cumberland interests, who had applied for the injunction, the charter was granted an hour after the court's decision.

*A RURAL LINE RINGING CODE CRITICISM.**

———, Iowa, March 25, 1907.

Editor, AMERICAN TELEPHONE JOURNAL,
New York, N. Y.

My Dear Sir:

I to-day am in receipt of the lost copy of March 23, and can well account for the delay. Such a system of ringing codes as suggested on page 190 could easily stop transmission in the mails. In lieu of the writer thereof putting 42 telephones on a twenty-mile line, I would suggest that a line be built from the East to the wild West and all farmhouses along the route put on it. It would not need to be a metallic line, as a line of No. 16 iron with so few (?) on would be large enough.

The advantage of this line would be that the people in the East could use it before break of day in the West, and when we were using it they would be in their little beds. I had no idea that so simple a question would excite so much valuable material, and almost hesitate to send in several more that I have in mind. Experience of 15 years in the telephone business in a state that has more rural telephones than any State in the Union has taught me that 15 telephones on a rural line is just about 3 or 4 too many.

What we want is something practical, short and not complicated. Many of the suggestions so far lack in this particular. The benefit I can get from this question is the information which leads me to think that many of these rural lines are entirely too heavy. I cannot understand why they load them down so, and cannot see how they can give good service. Service on a rural line with us must be as near perfect as possible, and perfection can never be expected on a party line under the present system with 75 telephones on a single wire. How would my friend from Pennsylvania get 1-3 of a ring and 5 second space with a power ringer? We don't want to put stop watches on all our telephones until we have tried the system.

Yours truly, *S. E. C.*

INDIANA TAX COMMISSIONERS GIVE HEARING TO TELEPHONE COMPANIES.

DURING the week beginning April 28th, telephone companies will be given a hearing before the State Board of Tax Commissioners of Indiana, at Indianapolis. Formerly the session of the Commissioners during which telephone interests were considered was held much later in the season, so it is important that telephone companies should be aware of the change of date, in order that if they have any matters to bring before the board they may not be subjected to undue assessments through lack of knowledge of the hearing.

MAINE INDEPENDENT TELEPHONE ASSOCIATION PERMANENTLY ORGANIZED.

BY A. M. FOGG.

AN enthusiastic meeting of members and representatives of Independent Telephone companies from all over the State of Maine was held at the Dewitt House, Lewiston, Wednesday, March 20th, 1007. Although informal meetings have been held before, this one was called expressly for the purpose of organizing an Independent association, and it was unanimously decided to perfect a permanent organization. After a brief discussion of "Preamble," "Declaration of Purposes," "Constitution and By-laws," etc., a form was adopted for these statements.

The following officers were elected for a term of one year: President, F. E. Ebersole, Portland; vice-president, W. H. Lurvey, West Paris; secretary, M. E. Crow, Houlton; treasurer, Harry S. Russ, Mount Vernon; executive committee, Dr. Beihaut, Calais; F. L. Ames, Norridgewock; C. P. Chandler, New Gloucester; F. E. Ebersole, M. E. Crow. The president of the Maine Association, Mr. Ebersole, is a man with wide experience in Independent affairs, and will undoubtedly do much to make the new organization a strong one during the coming year. He feels confident that there will be a rapid advance in the movement.

At this meeting there were nearly 8,500 Independent telephones represented, and all sections of the State sent delegates. Among those present at the meeting were Harry S. Russ, general manager, Mt. Vernon Telephone Co., Mt. Vernon; Elmer E. Daicey, manager, Lewiston-Auburn Telephone Co., Lewiston; D. R. Smith, manager, Bethel Telephone Co., Bethel; W. H. Parsons, manager, Livermore Falls Exchange of Northeastern Telephone Co.; W. H. Lurvey, manager, Paris Hill & West Paris Telephone Co.; A. M. Fogg, Hebron Home Telephone Co., East Hebron; E. A. Ebersole, Northeastern Telephone Co., Portland; B. N. Lewis, Northeastern Telephone Co., Lisbon Falls; H. B. Hartford, manager, Standish Telephone Co., Standish; C. P. Hubbard, manager, Lovell Telephone Co., Lovell; F. E. Ebersole, vice-president and general manager, Northeastern Telephone Co., Portland; G. R. Armstrong, manager, Farmington Exchange, Northeastern Telephone Co.; M. E. Crow, manager, Aroostook Independent Telephone Co., Houlton. Among representatives of manufacturers were Ivan Goodrich, Chicago Telephone Supply Co., Chicago, Ill.; A. D. Richmond, C. S. Knowles & Co., Boston; J. S. Wells, Union Hardware & Electrical Co., Providence, R. I.

Letters of regret were read from a number who were unable to be present.

METHODS OF CREOSOTE ANALYSIS.

IN its Trade Bulletin No. 13 the United States Forest Service announces that the growing scarcity of lumber, with the consequent high prices, is making it imperative that more attention be paid to preservative processes whereby the time of service of timber may be lengthened. Coal tar creosote is generally regarded as the most efficient of the wood preservatives. This product is very variable in composition, owing to differences in the coals used and in the methods employed in their distillation. Creosotes of different compositions are believed to have different values as wood preservatives, and an analysis of the oil used is, therefore, important.

No very large amount of study has been directed to perfecting the methods of creosote analysis, and the Forest Service, believing the matter vitally important to the progress of wood preservation, is now carrying on an investigation of these methods.

The most important part of a creosote analysis is the fractional distillation, since by this operation an approximate determination is made of the relative proportions of the most important substances in tar oil. There has been considerable divergence of opinion as to the best way of carrying out the fractionation of tar oils, some recommending a retort as a distilling vessel and certain temperatures for taking fractions, others recommending a distilling flask and a different set of temperatures.

Laboratory experiments carried on by the service have shown that the differences in the weights of the fractions

*EDITOR'S NOTE.—Where there are as many different ways of accomplishing a result as are being brought out in this rural line discussion it is inevitable that there should be many differences of opinion. This is a long story, and we have decided that the best way to handle it is to leave it practically in our subscribers' hands and let them sort the wheat from the chaff. There will be good points for every one, both in the line of what to do and what to avoid.

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obtained when using different sorts of distilling vessels are not large, but that the composition of the fractions indicate a little better separation by the flask than by the retort. As regards the influence of the rate of distillation, variations of from one to three drops per second have but slight influence on the weights of the fractions, although the slower rate is more satisfactory.

It is commonly believed that the relative amounts of light oil, naphthalene and anthracene oil are the most important factors determining the value of the creosote for wood preservation. A number of creosotes were very carefully fractioned and determinations made of the amounts of naphthalene and solid anthracene oil distilling between various temperatures. The average of the results shows that at least twenty-five per cent. of naphthalene was present in the distillate between 205° and 250° C., and that over twenty-five per cent. of anthracene oil solids are present in the distillate above 300° C. Work on the specific gravity and the index of refraction of the distillates between different temperatures is now being carried on, and the results will be made public after the completion of experiments.

The desirability of getting the criticisms and suggestions of users of creosote has led to the publication of a detailed account of the methods employed in the experiments and the results which have been obtained. Those who desire the publication should ask for Circular 80, Fractional Distillation of Coal Tar Creosote. The request should be made to the Forester, Forest Service, Washington, D. C.

Telephone Legislation in 1907*

MISSOURI.

HOUSE BILL No. 546, introduced by Mr. Emerson, Jan. 22, 1907, is an act the object of which is to compel public utility companies, including telephone companies, which operate under franchises to charge no more for their service than the rates fixed by the cities, towns, or villages in which they operate.

HOUSE BILL No. 666, introduced by Mr. Groff, Jan. 29, 1907, is similar in purport in so far as it affects telephone companies to House Bill No. 546, although it differs in its provisions affecting electric power companies.

HOUSE BILL No. 302, introduced by Mr. Brooks, Jan. 16, 1907, is a rate limiting act, providing a maximum rate of $5.00 per month for business service, and $1.00 per month for residence service in cities of 10,000 people or more; for all telephones outside the limits of cities with more than 10,000 population, maximum rates are fixed at $2.00 per month for business and $1.00 per month for residence service; long distance rates are subject to a provision calling for a maximum day rate of one-quarter cent per mile and one-half of this rate for night messages.

HOUSE BILL No. 393, introduced by Mr. Brooks, is intended to empower county courts or the municipal authorities of any city, town or village to regulate the rates for telephone service, which is included with other public utilities. It is provided that in order to ascertain what rates are just and reasonable the county courts or municipal authorities shall hear testimony from all interested parties at a public hearing after notification in prescribed form.

HOUSE BILL No. 60, introduced by Mr. Noyes, Jan. 4, 1907, is a physical connection bill, providing that where two or more telephone companies maintain an exchange in the same city or town, it shall be their duty to establish a means of exchanging messages between their principal offices. A novel provision in this bill is that a subscriber to one of the telephone companies who may wish to secure connections from the lines of the other may deposit the sum of $5.00, out of which his tolls shall be taken at the rate of 3 cents for a three minute local conversation until the deposit is exhausted. Other clauses of the Act relate to the penalties for disobedience.

SENATE BILL No. 108, introduced by Senator Dowell, Jan. 14, 1907; the object of this bill is to prevent the charging of unequal prices for the same kind of service in different cities of the same class by the same company. The penalty proposed is a fine not to exceed $1,000 and the revocation of the company's charter to do business in the State.

HOUSE BILL No. 178, introduced by Mr. Barry, Jan. 8, 1907, is an act to repeal section 1,255, article 6, chapter 12, Revised Statutes of Missouri, 1899, and to enact a new section in lieu thereof, relating to the duties of telegraph and telephone companies in connection with the handling of messages.

SENATE BILL No. 313, introduced by Senator Humphrey, Feb. 1, 1907, provides that it shall be unlawful for any corporation or person to string a wire over the tracks of a railroad company, except at such places and in such manner as shall be approved by the railway commission, with due notice to the railroad company. The railway commission has full power to regulate the height and manner of the running of such wires. The height in no case from the top of the track to the wire to be less than 22 feet.

MINNESOTA.

SENATE BILL No. 456, introduced by Senator Witherstine, Feb. 28, 1907, is a bill to provide for the imposition and collection of a proportionate earnings tax upon the gross earnings of all telephone property within the State. It provides that telephone companies shall return to the State Auditor before the 28th of February, in each year, a true statement of the gross earnings during the preceding calendar year, verified by the president and secretary or two of the other principal officers. This statement shall be made out to show the amount of gross earnings from toll lines and from each exchange. Three per cent. of the gross earnings is to be paid into the State treasury in lieu of all other taxes and assessments upon all property of the company within the State including capital stock and franchise. The remainder of the act relates to the distribution of the amounts so collected and the method of handling the information obtained under the act, and also the penalties for disobedience.

HOUSE BILL No. 340 provides that every telephone company shall pay into the State treasury on January 1st, 4 per cent. of its gross earnings derived from business within the State, which shall be in lieu of all general taxes on personal or real estate and upon the capital stock.

NEBRASKA.

HOUSE BILL No. 448, introduced by Representative Cone, Feb. 26, 1907, provides that it shall be unlawful for any person or corporation operating a railroad to permit a telegraph or telephone operator employed in relation to train service to be on duty for more than 12 hours in any 24 consecutive hours.

SENATE BILL No. 100, introduced by Senator Epperson, Jan. 14, 1907, is the well-known Nebraska physical connection act, the object of which is to make all companies operating telephone lines or exchanges common carriers, subject to the regulations, so far as applicable, which regulate the transportation of property by railroad companies, and to put the telephone companies under control of the State Railway Commission. Rebates and other devices for unjust discrimination are prohibited and physical connections between systems operating in the same localities is made compulsory. The Railway Commission is given power to regulate such joint service as may be given when such connection has been made, as well as to regulate rates and the distribution of receipts after granting a hearing to interested parties. The act provides that an appeal may be taken by any company from the ruling of the commission to the district court of the county, the burden of the proof being in all cases upon the appellant. Telephone companies are required by another clause to make annually a full statement of the value of all their property and franchises, with a statement of indebtedness and receipts and expenditures for the past year for the information of the Railway Commission. This statement is required to include the number of instruments owned and employed by the company and number of miles of line owned or operated, also the number and character of the exchanges, with their location. The State Railway Commission is given power to regulate the methods of keeping accounts of telephone companies. Telephone companies are required by clause 24 of the bill to post in conspicuous places in their public offices, toll stations and public booths, schedules of all rates and tolls charged.

SENATE BILL No. 312, introduced by Senator Wilsey; referred to Committee on Judiciary. This act provides that all telephone wires which pass over the line of any steam railroad shall be supported on good, substantial poles not less than 12" diameter at the bottom and 6" diameter at the top, set in the ground not less than one-sixth of their length, and well tamped. Double cross-arms shall be used, and all wires insulated with glass or porcelain insulators, securely fastened to both cross-arms. The cross-arms should be set in gains not less than 1" deep and fastened with two bolts. All wires must clear the top of the rail by at least 27 feet.

SENATE BILL No. 378, introduced by Mr. W. R. Patrick, read first time February 26, 1907; read second time February 27, 1907, and referred to Committee on Miscellaneous Corporations, provides that no railroad company shall require or permit a telephone operator employed in connection with the train service to be on duty more than twelve hours in any twenty-four consecutive hours.

HOUSE BILL No. 103, introduced by Mr. Jenison, read first time January 16, 1907; read second time January 17, 1907, and referred to Committee on Telegraph and Telephones and Electric Companies, has for its object to make telephone companies common carriers, subject to such laws, so far as applicable, as now apply to transportation of property by railroad companies, and places telephone companies under the control of the Railway Commission. The passage of the act would give to the Railway Commission power to regulate rates, and the interchange of service which is provided for in the bill by a physical connection clause. It has a clause which prohibits rebates, and provides that the division of charges arising from joint service of two connecting companies may be regulated by the Railway Commission.

(To be continued.)

* Continued from the Issue of March 30.

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QUERIES

RESISTANCE OF COPPER WIRE.—(841.)

The writer has heard there is a simple method of determining the resistance of various sizes of wire without the necessitiy of consulting a wiring table. If you know of anything of this nature you will confer a favor by advising me. S. M.

The method of which you have heard is undoubtedly that which is frequently used in connection with copper wire of the B. & S. gauge, and is approximately covered in one sentence, *i. e.:* A wire which is three sizes larger than another wire has half the resistance, twice the weight and twice the area, and a wire that is ten times larger than another wire has one-tenth the resistance, ten times the weight and ten times the area.

Thus if you will take as a basis No. 10 copper wire, remembering that it is 0.10 inch in diameter, it has an area of 10,000 circular mils, it has a resistance of 1 ohm per thousand feet, and weighs 32 pounds per thousand feet, you will be able to determine readily the resistance, size and weight of wire of any other size. Copper wire is approximately 1 1-7 times the weight of iron wire the same size.

Another way of stating the same thing is that the ratio of resistances corresponding to each higher number is as follows: 1:1¼, 1:1½, 1:2. Thus No. 11 wire has a resistance of 1¼ ohms per thousand feet; No. 12, 1½ ohms per thousand feet; No. 13, 2 ohms per thousand feet. Then use the same ratios with the resistance of No. 13 wire as a base for computing numbers up to 16, etc.

TELEGRAPH REPEATER CONNECTIONS.—(842.)

In your issue of Nov. 10, 1906, you show a telegraph repeater circuit. I would like to ask if all of these circuits could not be worked from one battery or generator; also if you wanted to connect one more station in on this line how you would do it. M. V. W.

By following the circuits shown with the article on November 10th you can probably see very easily how the instruments operate. If you do this you will see that the object of the repeater is to pick up feeble currents on one line, and send out

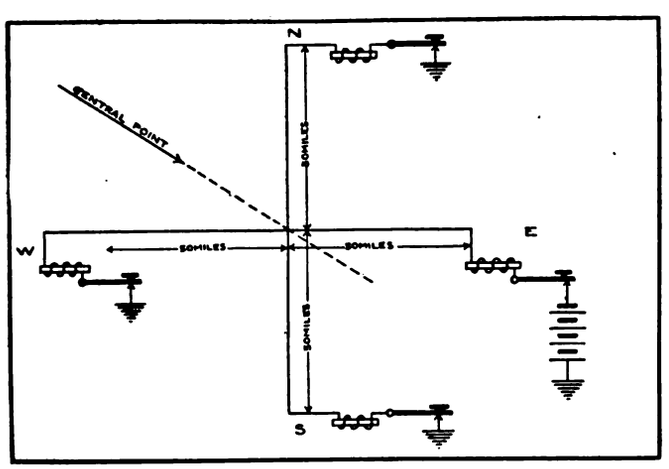

Fig. 842a.

corresponding currents over the other line, which shall be capable of making stronger signals than those received at the repeater. For instance, if you wished to transmit signals over a five hundred mile circuit, it might appear to you that you could obtain the necessary power for doing this by using a high voltage battery or machine at one end. You would find, however, that the current would diminish so rapidly near the end of the line, owing to leakage, which would be much greater with high voltage than with a low electromotive force, that you would not get good results.

The use of a repeater is an alternative which is much more satisfactory. An automatic repeater, in fact, takes the place of an operator, as without it you would find it necessary to have an operator receiving on one line and sending out on the other, owing to the impossibility, as we have explained, of using extremely high voltage batteries.

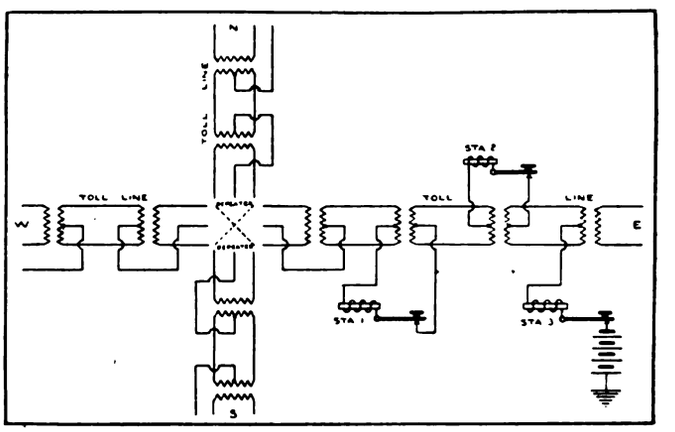

Fig. 842b.

A modern telegraph repeater will repeat a message in either direction, and even has the advantage over an operator that its working is instantaneous, the signal being retransmitted practically at the instant of its reception, thus giving the effect of a through line as far as practical working is concerned.

By an examination of Fig. 842*a* you will readily see that in connection with a four way circuit, such as was described in the article referred to, the use of a single battery would be wholly impracticable. For instance, if you should open the key at *east* with a single battery, the armatures at *north, south* and *west* would all fall back; close the key at *east* and they will all come up again, the signal thus being transmitted from *east* to all of the other stations. It would, however, be impossible for *north, south* and *west* to break each other, as the line would be grounded. The use of a repeater with separate batteries makes it possible for them to signal each other.

As to your second question: Fig. 842*b* shows how to connect several stations into a line, the connection being made on the ordinary simplex circuit plan. Fig. 842*c* shows a single wire

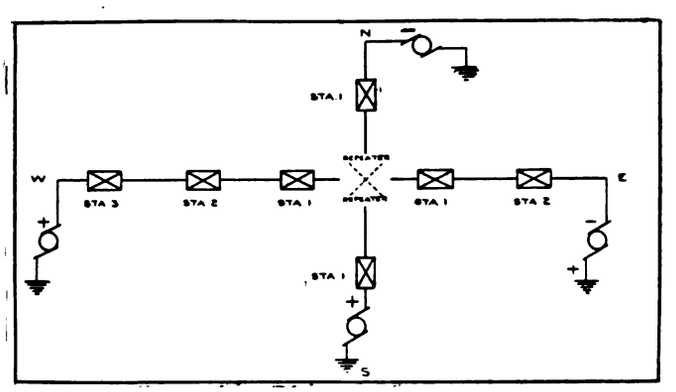

Fig. 842c.

telegraph line, with several stations connected into it; and, you will see that if you consider that in the simplexed part of the telephone line both sides of the telephone line form practically a single conductor for telegraph current, conditions in the two last figures may be made similar.

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THE EDITOR'S PAGE

BUILDING UP THE SOUTH.

NASHVILLE has at last been opened up to the Independents. Probably the longest and most bitterly and persistently fought campaign which has ever been carried on by an Independent company reached its culmination in the court decision which affirms the validity of the new Tennessee law, and the granting within an hour of a State charter for an Independent telephone system in the principal city of Tennessee and the home of the Cumberland branch of the Bell company.

Readers of AMERICAN TELEPHONE JOURNAL have for more than a year past been kept informed, as rapidly as they took place, of the important steps in the proceedings which have led up to this all-important result. A brief review of these matters appears in an article upon another page, which terminates with the report, received by telegraph at the time this paper goes to press, of the final success of the Independent interests.

The results of this decision will be far-reaching. It gives to the Independents far more than the right to operate in one of the most important cities in the South. Already a number of the largest cities in the Cumberland territory contain well developed Independent systems which are receiving the hearty support of citizens. Smaller cities, too, are served by Independent lines, and rural systems have been built in hundreds of places. Still, this section of the country is very far from being developed with the thoroughness that characterizes the work of the Independent systems in the surrounding States. Local influences have been too strong, and there has been a lack of confidence in the future support of governing bodies which has been a decided hindrance. Now the hold of the monopoly upon its own State is broken. Legislature, governor, and the courts have decided against it, and these are all supported by a strong and aroused public opinion. The Independents have arrived, and have come to stay.

Conditions are ripe for the building of hundreds of small plants, and many of these will be constructed within a comparatively few months. Toll service of the highest grade will be assured to them by the well-built lines which are being pushed through from Kentucky to the gulf, reaching all important centers of population and business.

The dissatisfaction with the Bell service which is reported in numerous localities—and is so deep-seated as to have called forth organized protests from hundreds of citizens in Mississippi, Tennessee and other States—will assure to the new lines a good business from the start.

Last year brought into reach of the Independent companies many important cities. Still, in spite of the greater size of some of the cities which expressed their approval of telephone competition, it is doubtful if any Independent victory was more significant than this opening up of Nashville, for this has been brought about through the pressure exerted by the people of an entire State, aided by their neighbors in a large and important section of the country.

SPRING TREE TRIMMING.

HOW many companies plan the trimming out of their lines and carry on the actual work in as thorough and systematic a manner as characterizes other branches of maintenance work? The importance of doing this is shown not only by the number of service complaints that are traced to interference of branches and foliage of trees with lines, but by the very large number of controversies and legal questions which relate to this matter of trimming. It is something that requires no haphazard action, but definite planning, under competent and careful supervision

We recall once having made a trip through a certain town with a special agent of a telephone company and the local tree warden. This was in the autumn, and the tree warden was very conscientious and careful about the interests of his town, until by chance the route led by a cider mill. After this had been passed the telephone man found things easier, and when the linemen went along the route they found that they could cut for years to come. Now, this may have been all right for the moment, but it is not very hard to see where it may have been probably bad for the future.

Everyone who was interested in shade trees had something to say about the telephone company, and private rights of way have probably been granted only after prolonged protest ever since. That is one disadvantage of trimming in the fall of the year. It does too much damage to the trees. So the spring is far better. It is at this season that the work can be done with the least risk of permanent injury to the trees. Also, the absence of foliage makes it possible for the men doing the work to see, much better than is possible later in the season, what branches are likely to be a source of trouble. It should be borne in mind that there is a chance of trouble from limbs at the side of the line which may be swayed by the wind, as well as from those growing directly into the wires. It is well to have a rather definite idea of the rate of growth of different kinds of trees, for by looking ahead a year or two it is often possible to make cuttings which in the end save considerable to the telephone company, without permanently injuring the tree.

When a company sends out a trimming gang the viewpoint of the general public has to be borne in mind just as much as when solicitors are sent out for contracts. The average town dweller likes to see the trees along the streets look well. That is the main thing they were planted for. When cutting must be done, he demands that it shall be done cleanly. When he sees where a lineman has hacked away at the middle of a limb, cutting from the top and letting a long sliver peel off on the lower side, he gets angry. He knows who is to blame, and his anger is likely to be pointed, as well as strong. The wise telephone manager looks after his trimming carefully, for it is good business to keep the good opinion of the people in his town on all matters he sets before them.

LIGHTNING AND THE NEWSPAPER MEN.

THE way some telephone men will talk to a reporter is astonishing. The latest evidence that someone has taken a young newspaper man and spoken with him in a fatherly fashion until he was well "filled" comes from a city where lightning went on a rampage and ate up a telephone cable or two. This wasn't enough for the man who had to make a story. Something brilliant, startling, anything to make the story fit the occasion had to be worked up. He was probably looking for information that would help him out on this kind of a story, and he surely got it. "Large blue balls of fire danced along the wires, cracking like the reports of revolvers." How is that for a good one?

Still, in spite of the amusement this gives a telephone man, it's pretty poor stuff to circulate among subscribers and those who are prospective telephone users. There are too many timid ones who are likely to persuade themselves that putting in a telephone is just like hurrying ahead the day of judgment.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

JOINT LIABILITY FOR SAGGING WIRES.

As one of your subscribers, I take the liberty of submitting to you the following statement of facts and asking your opinion as to the liability of the telephone company.

This company had its line of wires on one side of a street, erected by permission on the poles of a trolley company. On the other side, on the poles of the Bell Telephone Company, were electric wires. The tel phone company had occasion to string its wires directly across the street and then through vacant lots to reach a subscriber, and strung these wires so that they were between the electric light company's wires and those of the Bell Telephone Company, but some distance from both. During a very severe sleet storm the telephone wire came in contact with the electric light wire, though apparently the contact was a swinging one and not fixed. The insulation on neither wire was burned through, though several of the fuses were burned out on that particular telephone line. One of the subscribers on this particular line owned a market which was burned, although the fire was not discovered for three hours or more after the cross occurred. The owner of the market had no insurance on his property and looks to the telephone company for reimbursement.

To recapitulate, when the cross occurred the insulation was not burned off the wires, though the fuses were blown out of the arresters in four or five cases. The arrester was of an approved form and properly installed. There are no guard wires between the electric light wires and those of the telephone company. The wires of the telphone company, during a very severe sleet storm, sagged and made a cross. Would the telephone company, in view of all these facts, be so negligent as to be, in your opinion, liable for all the loss incurred? Or would the liability be joint? Or would the liability be that of the electric company solely?

I would appreciate such suggestions as you would care to make.

L. H. W.

UNLESS the sleet storm was one of such severity as not to be expected in the latitude where the accident happened, it would make no difference with the question of liability. It seems to us that the electric light company is liable for the injury because it was its duty to erect guard wires to prevent the escape of electricity from its wires to other wires. This duty rests upon the electric company on account of the powerful current of electricity it uses. Guard wires have been declared to be the most effectual remedy for preventing contact with other wires. State vs. Janesville Street Railway Co., 87 Wis., 72; 41 A. S. R., 23; 4 Am. Elec. Cas., 289. Where both companies knew the situation was dangerous it has been held that it is the duty of both to erect guard wires, and that both are jointly liable for failure to do so. McKay vs. Southern Bell Telephone Co., 111 Ala., 337; 31 L. R. A., 589; 19 S., 695. Central Penn. Tel. Co. vs. Wilkes-Barre & W. S. R. Co., 11 Penn. Co. Ct., 417.

"TRUST BUSTING" SUITS IN INDIANA.

FIVE suits have been filed at Shelbyville, Ind., against the Mutual Telephone Company and the Central Union (Bell) Telephone Company. They are "trust busting" suits and allege that the sale of the Mutual Company to the Central Union Company was merely a pretended sale and that it is a conspiracy to restrain competition. The plaintiffs in all these cases make the same allegations. They maintain that they had contracts with the Mutual Company to furnish them telephone service and that one of the provisions of the contract was that none of them should be placed on "party lines."

The plaintiffs allege that after the "pretended" sale of the Mutual Company to the Bell company the agents of the last named company entered their houses and stated that they were going to put in new telephone instruments and wire the house for party line telephones. The plaintiffs now ask the court to declare the transfer from the Mutual Company to the Bell company null and void and that the property be transferred back to the Mutual Company and the business placed in the same hands it was before the pretended sale.

LAND OWNER'S SILENCE DOES NOT BAR HIS SUIT TO REMOVE POLES FROM HIGHWAY.

THE American Telephone and Telegraph Company constructed its lines on the highway without obtaining the consent of the land-owner upon whose fee in the highway the lands encroached and without condemning such right of way. He delayed some time before bringing suit, but not beyond the statute of limitations provided in such cases. Then he sued for a mandatory injunction to compel the telephone company to remove its lines. There was no pretense that the company had not a right to appropriate the complainant's property to its own use without compensation. The sole claim made in support of its position was that the land-owner stood by and permitted the company to construct the line and in no sense interfered with it. The court found that the company was in no different position than any other person entering upon another's land, knowing he had no right, and did not change its position in any way in reliance upon the land-owner's silence. The company showed that a large number of long-distance telephone messages were sent over the line delayed, and that it would be convenient for the public to have the company occupy the complainant's land. This fact the court held to be of no importance whatever, as the law provided a way of taking land for public use by condemnation proceedings. It was therefore held that a mandatory injunction should issue as asked for by the complainant. Burrell vs. Telegraph Co., 79 N. E., 705.

INJURY TO SUBSCRIBER ON TAKING HOLD OF THE TRANSMITTER.

A JUDGMENT for a remarkably large verdict, amounting to over ten thousand dollars, was affirmed by the Supreme Court of Pennsylvania, in the case brought against the United Telephone and Telegraph Company, of Chester, Pa. Thomas Delahunt was a subscriber who had been having trouble with his telephone instrument. This had been out of order and unfit for use for some time. One evening a sound resembling the noise made by a cricket came from the direction of the telephone, and Mr. Delahunt said, "I believe that is the telephone. I wonder if it is in use." He then got up and walked over to it and took hold of the transmitter with both hands, drawing it down. As he did so, there was a flash of flame all around the telephone and he was almost instantly killed by the electric shock. His two children brought suit against the company and recovered. The plaintiff did not prove the particulars of the company's alleged negligence, the trial court applying the doctrine that the injury presumed negligence, and this, the Supreme Court held, was a proper decision and the doctrine *res ipsa loquitur* properly applied.

The defense of the company was that the deceased was guilty of contributory negligence in taking hold of the instrument after he heard the noise, and when he knew the line had been out of order. The court held, however, that the deceased did only what anyone would have done under the circumstances and was not negligent. He was standing on a wet carpet, but this, the court decided made no difference with the case. Delahunt vs. United Telephone and Telegraph Co., 64 A., 515.

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IN THE OPERATING FIELD

A FEATURE OF CABLE DISTRIBUTION IN MEXICO.

By "Noleye."

THE illustration on this page is made from a photograph of one of the house-leads of the Ericssons' underground system in Mexico City.

On the corner, near the trolley pole, and dominating the two streets, is the pit where the main cables are run. The 100-pair cable necessary for distribution in this block runs from the pit in a single cement duct under the sidewalk to the side of the house, goes up through a cast-iron elbow to a certain height, where a sheet-iron pipe (galvanized) joins the iron elbow, and runs through this up to the top of the roof. In convenient corners formed by the parapet, which runs all around the flat roof, the various 20, 10 and 5 pair distributing boxes, made of cast iron, are placed, and thence the small distributing cables are carried out to the different subscribers.

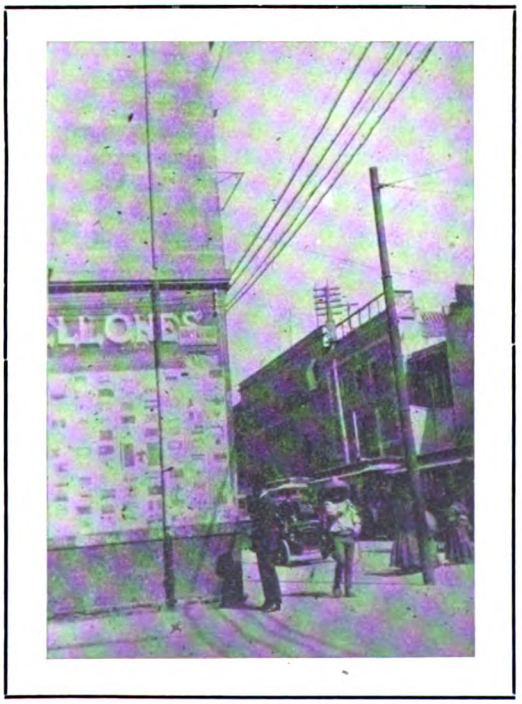
The leading-up pipe is painted the same color as the house, and in no way disfigures the building. not even when placed on the flat wall of a house, as is the case in the illustration. In most cases the division line between two buildings is selected, and in such a case a 100-pair cable lead can hardly be noticed.

There are about thirty blocks supplied in this manner already, and the work of connecting up subscribers in these is progressing rapidly.

POWERFUL ORGANIZATION WILL BUILD INDEPENDENT SYSTEM OF LONG-DISTANCE LINES IN MICHIGAN.

LONG-distance lines which will provide for all the needs of Independent telephone exchanges in Michigan, giving connections between the individual Michigan companies as well as an outlet to the rest of the country, are to be built by the Inter-State Long Distance Telephone Company. The capitalization authorized by the charter is $15,000,000, of which two-thirds will be preferred stock, the par value of all shares being set at $100.

The names of the incorporators are: William B. Woodbury, Hugo A. Koehler, C. Marquard Forster, Max Koehler, Thomas H. Wagner, Charles H. Hood, Sam B. Jeffries, George E. Lawson, Henry C. Potter, Jr., John M. Dwyer, William T. Barbour, Henry Koehler, Jr., William W. Grayson, J. J. Goodyear and Fred T. Moran. These gentlemen will not only be directors in the Inter-State Long Distance Company, but they will also form a part of the directorate of the Home Telephone Company of Detroit, and will constitute the executive committee, which will control both companies. A voting trust has been formed to prevent members from disposing of the holdings of stock to competing interests. R. B. McPherson, of Howell, Mich., president of the Livingston Home Company of that city, is also one of the directors of the new company, being represented on the local governing board by William W. Grayson. E. A. Faust, vice-president of the Anheuser-Busch Brewing Company, is represented by Charles H. Hood.



Cable Carried up Wall of Building in Iron Pipe—A Typical Distribution Feature in the City of Mexico.

It is said that $1,500,000 is to be expended for construction during 1907, and work on sixty telephone circuits, including more than 3,000 circuit miles of wire, will be pushed with a large force of men until the entire system is completed. The plans cover the construction of new pole lines from Detroit to Toledo, Adrian, Jackson, Lansing and Holly, where connection can be secured with the leading Independent lines of the country and an unbroken system established. The Toledo line will establish an adequate connection with eastern points; the Adrian line will accommodate southwestern Michigan; the Jackson line will serve the central portion of the State and furnish a direct line to Chicago; the Lansing branch will connect with the Independent telephone systems in the Grand Rapids district, and the Holly line affords a means of reaching Flint, Saginaw, Bay City and the entire Saginaw Valley.

BELL FRANCHISE REPEALED BY CITY COUNCIL AT MT. VERNON, IND.

THE City Council at Mt. Vernon, Ind., has repealed the franchise of the Cumberland Telephone and Telegraph Company, granted in February, 1899, for a period of fifteen years, and the city now asserts that the company is operating without authority. Before a new franchise is granted, the city demands more favorable conditions to subscribers, cheaper toll rates, free telephones and a short-term franchise. The Cumberland Company responds that it is operating under an old and perpetual franchise, bought from the American Telephone and Telegraph Company. This franchise was granted by the City Council in 1899, but it was never operated under by any company, and it was repealed in December, 1906, on the ground that it was illegal because of its perpetual features. If the company persists in operating under the old American franchise it is said that the city attorney will institute mandatory proceedings looking to the removal of the Cumberland poles and wires from the streets. This proceeding will bring into question the legality of the franchise granted to the American company.

PROGRESS ON THE MUNICIPAL TELEPHONE SYSTEM AT EDMONTON, ALBERTA.

WORK is progressing very rapidly on the telephone system now being installed by the City Council of Edmonton, Alberta, and it is expected that the new system will be in operation by the first of next August. Since work was first started there has been a decided rise in the price of materials, and it is expected that the $60,000 set aside for the installation of the system will not be sufficient on this account. It is also expected that the 1,200 telephones arranged for will not be sufficient to meet the requirements by the time the plant is ready for operation. At present there are 580 telephones in operation and applications for 140 more connections. The charges to be made are as follows: Business, desk instruments, $33.00 per year; wall instruments, $30.00 per year; residences, desk $23.00, wall $20.00; party lines, two instruments only, $50.00; rural system, toll

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charges, minimum, $20.00, the same rates charged in the past.

At these rates the system during 1905 paid a net profit of $4,149.98, and there will be no reduction in rates until the running expenses are ascertained, after which the rates will be put on the lowest possible working basis. Strathcona is also to install a system soon, the Edmonton Council having been granted a twenty-year franchise to extend the lines across the river.

MISSOURI DISTRICT ORGANIZATION MEETS AT HANNIBAL.

TELEPHONE companies from Monroe City, New London, Laddonia, Vandalia, Center, Hannibal and Quincy were represented at the meeting recently held at Hannibal. The Independent telephone men who compose this organization are taking up many matters which will tend to improve conditions in the section in which they operate. The association was not organized until last January, but it is expected that it will make it possible for companies to carry on many improvements which will benefit subscribers to the Independent service, and improve conditions under which the associated companies operate. A. P. Matson, of New London, is president of the association. Among those present at the recent meeting were the following: Robert Merriweather, Monroe City; J. D. McCune, Vandalia; J. H. Davidson, Hannibal; F. A. Parker, Quincy; A. P. Matson, New London, and J. R. Braden, Laddonia.

RURAL LINE COMPANIES PROTEST AGAINST SWITCHING FEES.

TELEPHONE interests at Scottsville, Ky., have been worked up to fever heat recently by the fifty-two rural Independent lines entering that place refusing to pay the increased charges assessed against them by the Allen County Home Telephone Company, which owns and operates the exchange in Scotts- Telephone Company of Macon County, Tenn., have each agreed ville, to which the rural lines are connected. Heretofore the town company has been charging the rural lines each $10 per year for connections. Recently the rate was changed to $3 per telephone on the rural lines. Many of the country lines have as many as ten instruments on the line, which would make them pay as high as $30 per year for service. The Cumberland and the Home Telephone Company of Macon County, Tenn., have each agreed to put in a switchboard at Scottsville and take the business of the rural lines, but no agreement has been arrived at. Fifty-four Independent lines and the Cumberland (Bell) line are interested in the muddle, which will hardly be settled for some time.

DO YOU SHUT YOUR DOORS TO BUSINESS?

You're not so foolish, you say.

But wait:

Is your telephone busy very often in the day?—valuable patrons dissatisfied?

Is your private exchange crowded with so much business that the central operator must give the busy signal to anyone?

Do you know that it is exactly the same to a patron who calls you up and finds you busy, as if he had called at your office and found it shut up and locked?

Do you know that your wires are capable of just a certain amount of business, which may have been plenty for you three months ago, but may not be nearly enough *now?*

Watch that telephone door for business.

You do more important business over it every day than any single one salesman—perhaps all of them—could do.

Ask for the Subscriber's Agent to make an analysis of your needs. He's hired to serve you free. His service may mean great benefit to you.

HOME TELEPHONE COMPANY.

Just call up Main 294, and talk it over.

Advertisement Used by a Telephone Company.

TELEPHONE COMPANY TAKEN TO TASK FOR ADVERTISING LIQUOR IN DIRECTORY.

CITIZENS of Paris, Ky., recently held a meeting and roundly denounced the policy of the Cumberland Telephone & Telegraph Company, which was carrying a liquor advertisement on the front cover of the local directory. In a letter to Dr. I. A. McSwain, who was elected secretary at the meeting where resolutions censuring the company were passed, Leland Hume, the Cumberland general manager, says:

"It is necessary for us, in the economical prosecution of the business, to make an effort to have each department pay its way,

Reproduction of a Portion of the Cover of the Paris, Tenn., Directory of the Cumberland Tel. & Tel. Co.

as far as possible, and bear its own burden, but we will seek, as far as the Paris Directory is concerned, other kind of advertisement, and will not knowingly or willingly do anything that would cause you to feel or act unfriendly or unkindly toward us."

On the inside of the cover appear the names of the executive officers of the company, separated from the liquor advertisement only by the thickness of the paper. Many people think it very strange that these men, in view of the character of many of their public utterances, should permit such an advertisement to appear in the directory under any circumstances. Telephone men are saying with some amusement that undoubtedly the company needs the money, but that is all the more reason why stockholders should see that it is managed by some one who knows when water is hot before he puts his foot in it.

PROPOSED BILL TO COMPEL CONNECTIONS BETWEEN COMPANIES IN MICHIGAN.

A BILL to make telephone companies common carriers and place them under the general supervision of the railroad commissioner is to be introduced into the Michigan Legislature, now in session. The bill provides that any company may be required to perform switching service for another company upon such terms and conditions as may be laid down by the railroad commissioner. It also gives any telephone company the right to intersect with or cross any other line, and compels such companies to connect their lines at convenient points in order to perform joint service. Absolute authority is given the railroad commissioner to fix and prescribe all necessary rates between points on the same line and also for joint service. The bill is fathered by Representative Duncan, of Wayne county.

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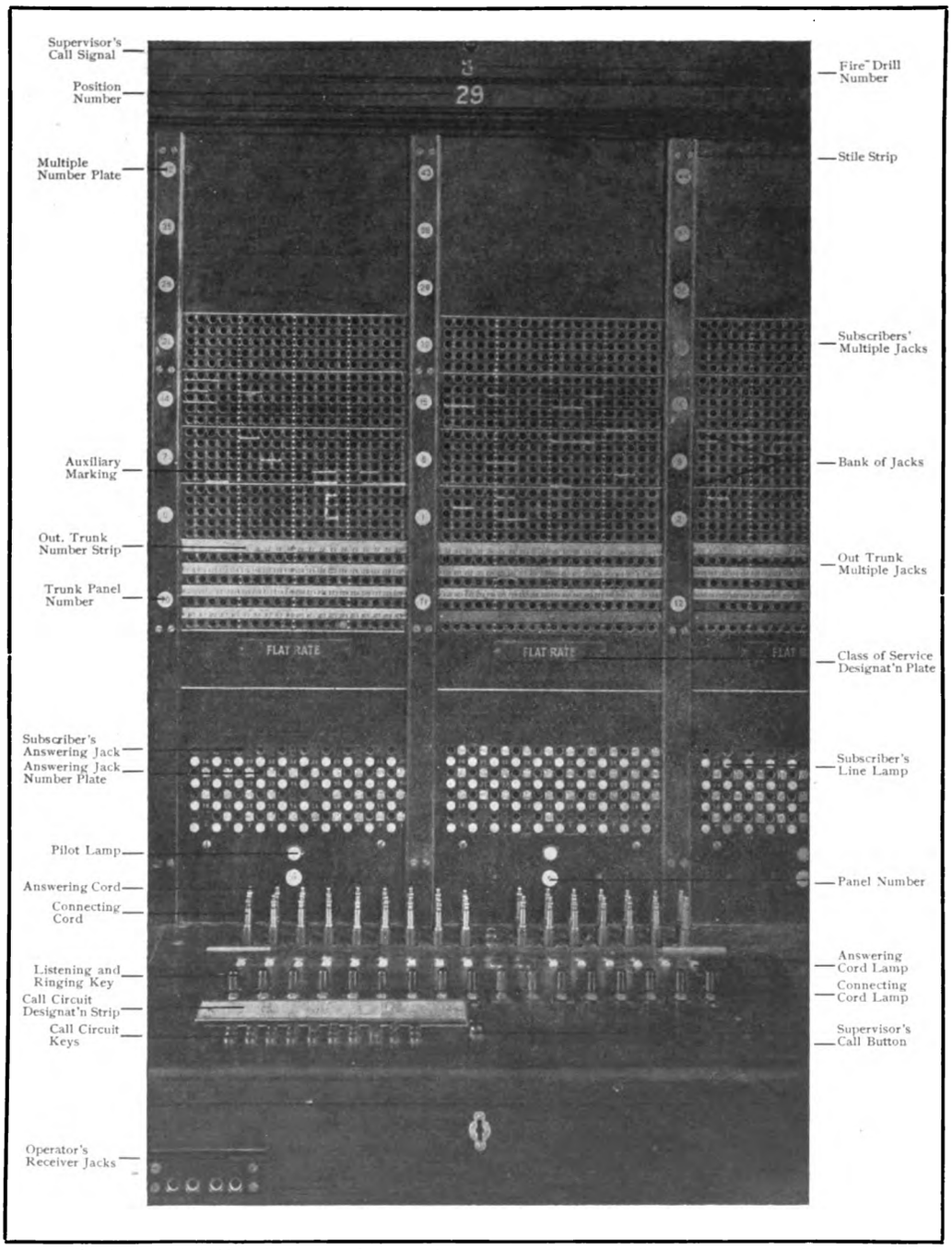
The Public and the Telephone Switchboard

VISITORS to the Chicago Electrical Show, and more especially those who were not familiar with the working of a telephone exchange, found many things to interest them in the branch exchange which gave service to the various exhibitors at the big exposition in the Auditorium.

This branch exchange was installed by the Chicago Telephone Company, and consisted of standard large size switchboard sections. So many people who watched the operators at work were anxious to find out just what each piece of apparatus was called and what purpose it served in the switchboard that the company had attendants stationed in its booth for the purpose of making replies to all inquiries. More was done than this, however, for pains were taken to provide the visitors to the branch exchange with materials which would enable them after reaching home to recall to mind what they had learned while looking at the actual working exchange. A card was prepared for distribution which bore a half-tone reproduction of portion of a section of a multiple switchboard, containing full equipment for a regular subscriber's position. The various separate pieces of apparatus were indicated by lines extending to their names printed in the margin. A reproduction of a portion of this card which shows these features appears upon this page.

The usefulness of this plan of publicity goes beyond the mere gratification of the curiosity of people who may or may not be subscribers to telephone service. The public is given to realize that a telephone switchboard is really a very complicated affair in itself, must be costly to build, and requires care and skill on the part of those who install and operate it as well as those who keep its delicate apparatus in the most efficient working condition. The information given out under this interesting plan should be helpful in maintaining a proper attitude between the public and a telephone company. It ought to have a strong tendency to reduce the number of complaints concerning trifling errors in the service, and also have the effect of diminishing the number of protests against the rates charged by the telephone company.



Portion of Switchboard Section Corresponding to One Operator's Position in a City Exchange.

FUNERAL SERVICE HELD BY TELEPHONE.

IN Auburn, Me., a few days ago, it is reported that a child was taken ill with diphtheria and died. The fact that a little girl in the house was ill with the same disease prevented the removal of quarantine, and the parents of the child found it impossible to ask a minister to come to the house. In this emergency the telephone was called into use, and by its aid the Rev. A. J. Marsh, pastor of the Baptist church at Auburn, led the services. In this way the telephone was the means of bringing consolation to the parents of the child.

Not only were services held, and the comforting words of the minister heard by the parents, but a number of friends joined the family in listening to them. This was made possible by the making of suitable connections at the central office, as well as by the use of other instruments on the same party line. This is the first time that a telephone has been used for such a purpose in the State of Maine, and is believed by many to be the first recorded incident of this sort which has occurred anywhere in the entire country.

The matter has been given wide publicity in the newspapers of the State, and elsewhere, and this publicity promises to be useful in extending benefits of telephone service to others who may be so unfortunate as to find themselves unable to hold religious services in the regular way during a similar emergency.

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TELEPHONE PATENTS

TELEPHONE ATTACHMENT.

William R. Whitehorne, Bethlehem, Pa., patents (No. 844,839; dated February 19th, 1907; filed September 19th, 1906; serial No. 335,288) and assigns to Howard C. Bailey, Philadelphia, Pa., a telephone attachment.

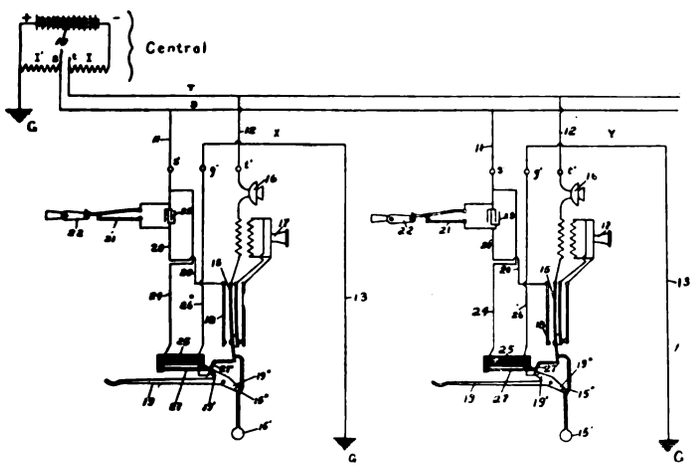
The object of this invention is to provide a means for one subscriber to signal another with whom he is connected through the central office, and who has his telephone off the hook but is not listening, without attracting the attention of the operator, or to enable an operator to signal an instrument when the receiver is off the hook. A repeating coil is provided with an auxiliary winding on the same core with the two windings included in the line. An armature is associated with the core, and is adapted to actuate a mechanism, which after the armature has been attracted and released a certain number of times will cause switch contacts to be closed. Under normal conditions, with both sides of the connection in use, the current through the separate windings of the repeating coil neutralize the core, but this condition of neutrality is periodically destroyed when one subscriber alternately opens and closes his line. When the switch is closed it allows alternating current to pass through the third winding of the repeating coil. This produces by induction in the line windings a high frequency alternating current, which being transmitted to the line causes the receiver at the desired station to operate with a characteristic hum.

PARTY-LINE LOCK-OUT SYSTEM.

Mark P. Boone, Peru, Indiana, patents (No. 845,328; dated February 26, 1907; filed January 27, 1906; serial No. 298,272) and assigns to The Peru Common Battery Lock-Out Telephone Co., Peru, Indiana, a common battery party-line lock-out system.

This patent is a modification of No. 798,561 issued August 29, 1905, to Mr. Boone, and claims to incorporate features whereby a person may readily communicate with another person on the same line, and experience no disagreeable noises during the period of establishment of the desired connection.

The inventor states that in practice he finds that when ringing



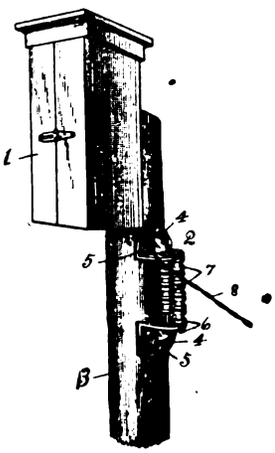
selectively on the line the alternating ringing currents are likely to cause a chattering of the relay, therefore he provides means whereby the receiver hook controls the movements of the relay armature 27.

A condenser is provided, bridged across the terminals of a push button 21 on the subscriber's instrument. This combination is used in the event of the calling subscriber desiring to communicate with another party on the same line.

By pressing the button 22 and opening the switch 21 the circuit of the current energizing the lock-out relays is opened and the called for subscriber may then remove his receiver from the hook. The alternating currents emanating from the called subscriber's instrument will pass through the condenser 23 readily and the calling subscriber thus being aware that the person desired is on the line, releases push button 22. This allows current to again flow through the lock-out relays in the other instruments, preventing other persons from entering into the talking circuit.

POLE DISTRIBUTION RACK FOR TELEPHONE SYSTEMS.

William Robinson, Muskegon, Michigan, patents (No. 846,144; dated March 5, 1907; filed May 3, 1906; serial No. 314,947) and



assigns to The W. G. Nagel Electric Co., Toledo, Ohio, a pole distribution rack.

This patent covers a form of wire distribution from cable terminals, and consists of an iron frame with suitable insulators mounted thereon to which may be attached the distributing wires leading away from the cable.

The claims on this bracket are, a form of support so adjustable as to accommodate any number of wires; a method whereby wires leading away from the cable in the same direction may be readily accommodated.

The adjustment is accomplished by moving the L-shaped brackets 4 to greater or lesser distances apart, and inserting bolts 6 of suitable length, upon which are placed the insulating spools 7.

SELECTIVE RINGING AND LISTENING KEY.

Jules A. Birsfeld, Rochester, New York, patents (No. 848,283; dated March 26, 1907; filed February 13, 1905; serial No. 245,524) and assigns to The Stromberg-Carlson Telephone Manufacturing Co., Rochester, New York, a switching device.

This patent is intended to cover an improvement over the switching device described in the application of Alexander M. Haubrich, filed September 28, 1904; serial No. 226,286. It relates to a combination four-party selective and operator's listening key, in which the movement of any of the four buttons restores to normal position any other button of the operator's listening key, or the movement of the operator's listening key restores to normal position any of the four ringing buttons.

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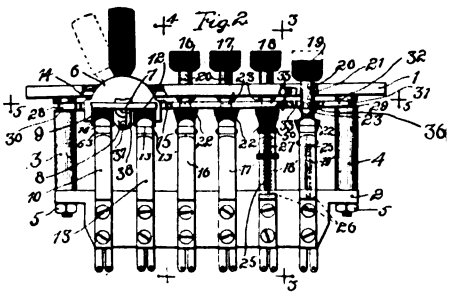
PATENTS—Continued.

The release of the various buttons is by means of a sliding plate being actuated by the cam detent of the button or key operated.

The sliding plate 31 having a pressure exerted against it at all times by the steel spring 33 immediately slides over the shoulder of the cam detents 23, when a button is pressed down the entire



distance, thus locking it. Then when the cam detent on another button exerts pressure against the plate it causes the plate to move sufficiently to release the key previously locked.

The inventor also claims a key wherein the noise resultant of the quick return of the various buttons to normal condition is obviated by the use of separator plates between the contact springs, which cause the springs to retain, at all times, their proper adjustment, and consequently exert no retarding force on the plunger, thus allowing the use of a lighter helical spring for the purpose of restoring the buttons to normal position.

NOISE EXCLUDING ATTACHMENT FOR RECEIVERS.

James R. Challen, Collegeville, Pa., patents (No. 844,299; dated Feb. 12, 1907; filed May 12, 1906; serial No. 316,481) an attachment for telephone receivers.

This patent covers an auxiliary earpiece of soft rubber or other flexible material which is inserted in the opening of the receiver cap and is so shaped as to fit into the outer ear when the receiver is used in the customary manner. This, the inventor claims, entirely excludes from the ear any noises foreign to those set up in the receiver.

COIN COLLECTOR.

Frank R. McBerty, Evanston, and Howard B. Holmes, Park Ridge, Ill., patent (No. 846,500; dated March 12, 1907; filed December 7, 1904; serial No. 235,858) and assign to The Western Electric Company, Chicago, a coin collector.

This patent covers a form of coin collector or pay station in which the coin deposited operates a caliper lever by means of which the signaling mechanism is adjusted in such a manner as to allow of a distinctive signal being given by striking a gong several blows, the number of which depends on the class of coin deposited.

ATTACHMENT FOR TRANSMITTER MOUTHPIECES.

William Charles Plank, Las Flores, Mexico, patents (No. 843,362; dated February 5th, 1907; filed August 1st, 1906; serial No. 328,732) an attachment for transmitter mouthpieces.

This invention consists of an attachment consisting of a number of leaves of antiseptic paper padded to conform to the inside of a transmitter mouthpiece. Each sheet is provided with three extensions, which may be bent over the mouthpiece and engaged by a split metal ring, which fits over the front edges of both paper and mouthpiece, holding them securely together by its pressure. Each sheet has a line of perforations, in order to make it easy to tear it out and leave a clean sheet exposed.

PORTABLE TELEPHONE SET.

George F. Atwood, East Orange, N. J., patents (No. 842,377, dated January 29th, 1907; filed February 26th, 1906; serial No. 303,018) and assigns to the Western Electric Company, Chicago, Ill., a portable telephone set.

This patent covers a portable box divided into two partitions, the upper of which contains a tray for the reception of the telephone instrument, which may consist of a transmitter and receiver mounted upon the same handle. In the lower compartment are to be mounted an induction coil, condenser, ringer and bell, with auxiliary apparatus to facilitate their proper use. The box has cut in one face an opening provided with a flap to protect it from the weather. This opening is provided to make it easy to hear the sound of the ringer.

LOCK FOR MANHOLE COVERS.

Benjamin T. Letts, Elizabeth, New Jersey, patents (No. 845,182; dated February 26, 1907; filed May 31, 1906; serial No. 319,486) a lock for manhole covers.

The inventor describes a lock for manhole covers in which four arms are caused to operate radially from the center, entering below the outer casing of the manhole and retaining the cover in position securely.

The lock is so designed as to require the use of a special key to operate the releasing mechanism of the radially operated arms or clutches before the cover of the manhole may be moved.

CEMENT POLE.

Anderson G. Crow, Murphysboro, Ill., patents, (No. 839,272; dated Dec. 25, 1906; filed Sept. 24, 1906; serial No. 336,033) a cement telephone pole.

This patent covers a pole-section of cement or composition enclosing a metallic reinforcing core provided with means for coupling at its opposite ends. Being a sectional structure any desired height may be readily obtained. The cross-arms are made of tubes suitably arranged and coupled to the upper end of the top section.

ANTISEPTIC MOUTHPIECE GUARD.

Gerhardt E. Grimm, Camden, New Jersey, patents (No. 843,940; dated Feb. 12, 1907; filed August 12, 1905; serial No. 273,879) an antiseptic guard for telephone transmitters.

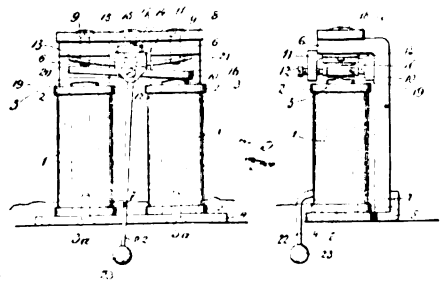
This invention provides an attachment for transmitter mouthpieces containing a roll of some form of tissue, saturated with a disinfectant solution, so arranged that it may be held taut in front of the mouthpiece. The attachment is secured to the mouthpiece by means of clamps which slide over the edge of the transmitter mouthpiece.

TELEPHONE RINGER MOVEMENT.

Klas Weman, Buffalo, New York, patents (No. 846,368; dated March 5, 1907; filed January 23, 1906; serial No. 319,080) a telephone signaling device.

The invention covers a telephone ringer movement of the polarized type. The objects aimed at are ease of assembling and adjustment of the armature by means of a single screw.

The armature 10 is mounted on a curved spring 13, which is



adjusted by means of screw 18, thereby altering the relative distance of the armature from the electro magnets.

There is also incorporated a thin sheet spring 19 between the armature and the pole pieces for the prevention of sticking of the armature, due to residual magnetism in the electro magnet cores. This spring is permanently attached to the center of the armature.

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THE NEW ANDRAE HOOK-SWITCH.

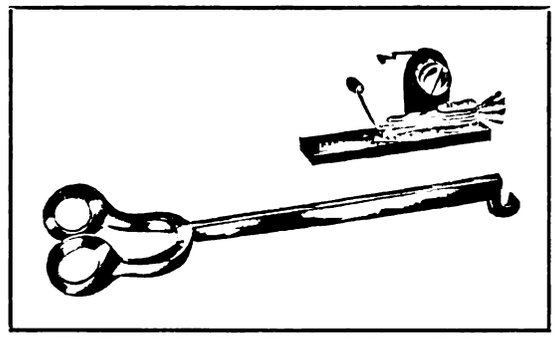
A NEW hook-switch has been designed by the Julius Andrae & Sons Company, 99 West Water street, Milwaukee, Wis., and is now being used in its telephones. This switch is of the long, detachable lever type, and has several very practical features.

The compensating spring is entirely independent of the contacts. It is given one turn around the bearing screw and one end anchored in the frame, while the other is bent to engage the hook-lever. The main contact spring is fitted with an insulating roller which engages the lever, thus obviating the friction.

The contact springs are insulated from the frame; contact points are of platinum. The entire construction conforms thoroughly with the high standard set by the Andrae Company for all its equipment.

AMERICAN ELECTRIC FUSE COMPANY GETS DETROIT CONTRACTS.

AMERICAN ELECTRIC FUSE COMPANY, Muskegon, Michigan, and New York, N. Y., has received from the Dean Electric Company the contract for all the switchboard protector apparatus used in the main and branch exchanges of the new Home Telephone Company, Detroit, Mich. The standard American type "H" protector was specified, it having been found to meet all the exacting tests and to answer all the specifications of Dean Electric Company's engineers. The order is for approximately 20,000 pairs of American type "H" protectors, and is claimed to be the largest switchboard protector order ever placed.



The New Andrae Hook Lever and Contact Springs.

American Electric Fuse Company also received direct from the Home Telephone Co., Detroit, Mich., the order for all the cable terminal equipment at Detroit, the American type "J" terminal being specified. The American Electric Fuse Company thus receives the largest contract let this year for cable terminal equipment and the largest order for telephone switchboard protector apparatus, the total contracts for Detroit amounting to more than twenty-five thousand dollars.

FIRE AT ROME, N. Y., HAS NOT AFFECTED ABILITY OF WIRE AND TELEPHONE COMPANY OF AMERICA TO MAKE DELIVERIES.

IT is reported by the Wire and Telephone Company of America, at Rome, N. Y., that since the fire which destroyed a portion of its plant on February 23, 1907, reports have been circulated that this will hinder the company in taking care of the requirements of its trade. The company is particularly anxious to have the trade know that the fire will in no way hamper the delivery of its various products. The fire destroyed only that part of the plant in which bare copper wire was drawn, and immediate arrangements were made by the company for the drawing of its copper by other mills.

The company was just about to erect a large addition to its plant, which, in connection with the rebuilding of the wire mill, is now well under way. When these buildings are completed it will have a thoroughly modern wire manufacturing plant in connection with another new and modern building to take care of its telephone business. The new buildings now in course of erection will be of brick and steel construction, absolutely fireproof. The entire manufacturing plant will be equipped with a sprinkler system, which, in connection with a pumping station belonging to the company and water tanks of sufficient capacity, will make its fire protection independent. The entire manufacturing plant, including present works, will be operated by electric power, equipment being so arranged that machinery can be driven independently in groups. The handling of copper throughout their works will be done by pneumatic hoists, and all machinery and equipment will be such as experience has demonstrated to be best adapted for the production of high-class work in connection with economy.

THE GRAY TELEPHONE PAY STATION COMPANY, Hartford, Conn., in its new catalogue, describes its full line of pay stations for use with all kinds of telephone instruments and in all sorts of locations. The illustrations show not only the exterior of the apparatus, but also the construction of the mechanism which is employed to insure positive signals and protection against fraud.

A device which is widely used in some places, and is giving good satisfaction, is the Gray No. 3 Register, which is attached to the telephone in such a way as to transmit a bell signal over the line when a call is recorded, and at the same time cause the register to be advanced one number on a dial which is visible to the subscriber. Full information concerning this apparatus and a copy of the catalogue may be obtained upon application to the company.

STROMBERG-CARLSON TELEPHONE MFG. COMPANY, Rochester, N. Y., is sending out a number of leaflets describing various types of cords for telephone switchboards, desk telephones and receivers. These folders are illustrated in such a manner as to clearly show the construction of the cord, form of tips, etc. They may be obtained, together with prices on any desired class of goods, on application to the company. The company is making a practice of sending out especially complete information on cords, showing in detail how, and of what materials they are constructed.

HELIOS MANUFACTURING COMPANY, Bridesburg, Philadelphia, Pa., is marketing a new form of protector for which the positive claim is made that it protects telephones absolutely against lightning. It is made with or without sneak current arresting coils. Particulars will be sent those interested.

THE AUTOMATIC ELECTRIC COMPANY, Chicago, Ill., announces the closing of a contract for 10,000 additional lines of automatic telephone equipment for the Home Telephone & Telegraph Company of Los Angeles, California. This is for immediate installation in the new Olive Street Exchange, and the completion of this exchange will practically mean the elimination of the manual equipment now in use in the present main exchange.

Other contracts placed with the Automatic Electric Company during the first two months of 1907 are: Home Tel. & Teleg. Co., Portland, Ore., 3,000 additional; Montana Ind. Telephone Co., Butte, Mont., 2,000 lines; Home Tel. & Teleg. Co., Tacoma, Wash., 1,000 additional; Rushville Co-Operative Tel. Co., Rushville, Ind., 800 lines; and several smaller additions to present automatic exchanges.

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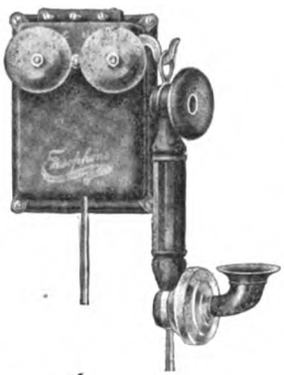

The Exchange Manager sees Lowest Maintenance Cost, Increase in Number of Subscribers, Demand for Hand Telephone.

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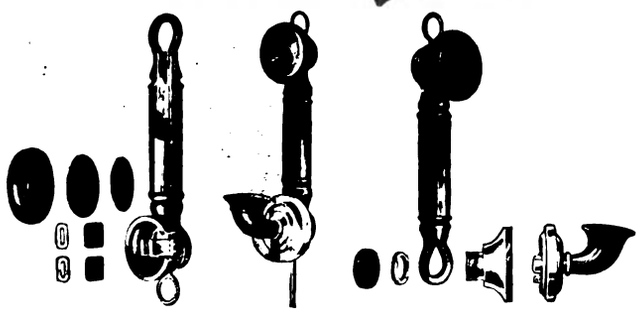

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THE WEEK'S MESSAGES

NEW COMPANIES.

LAKE BUTLER, FLA.—An Independent telephone company is being organized at Lake Butler, and $1,200 of stock has already been subscribed. Col. Knight is one of the organizers, and it is the company's intention to establish an exchange at this city, and build lines to the neighboring towns.

SANDWICH, ILL.—The Farmers Telephone Company, Sandwich, has been incorporated with a capital stock of $5,000. The incorporators are J. S. Knights, F. J. Steezer and O. H. Anfinsen.

SULLIVAN, ILL.—Articles of incorporation have been filed by the Sullivan Mutual Telephone & Telegraph Company. It has an authorized capital stock of $17,500, and the incorporators are C. E. Harsh, J. C. White and W. I. Sickafuss.

WESLEY, IA.—Articles of incorporation have been filed by the Blake & Nelson Rural Telephone Company.

GLADWIN, MICH.—The Gladwin County Telephone Company has been organized with a capital stock of $15,000.

MANKATO, MINN.—An Independent telephone company, to be known as the Le Sueur Valley Telephone Company, has been organized to construct a line from Mankato into Decoria. The following officers have been elected: President, A. Burlison; vice-president, Frank Pohl; secretary, Geo. Rivers; treasurer, Martin Bowe.

PAYNESVILLE, MINN.—The Zion Rural Telephone Company has been organized at Paynesville for the purpose of building lines out of this city into the farming community in the towns of Zion and Lake Henry. About thirty-four miles of line will be erected, and the following officers have been named: President, F. C. Nehring; vice-president, J. A. Roach; secretary, Wm. Arndt; treasurer, W. A. Manz.

BROOKHAVEN, MISS.—The Tpoisaw Telephone Company, with a capital stock of $2,000, has filed articles of incorporation.

SALEM, MO.—An Independent telephone company, to be known as the Barren Forks Telephone Company, has been organized to construct a line from Salem to Timber, a distance of about thirty miles.

ANDES, N. Y.—The Andes and Bovine Telephone Company, of Andes, has filed articles of incorporation. It has an authorized capital stock of $480, and the incorporators are George Little, J. L. Strangeway, William J. Hyzer, of Andes, N. Y., and others.

POPLAR RIDGE, N. Y.—The Cayuga Southern Telephone Company has been incorporated with a capital stock of $50,000, and will operate Independent telephone lines and exchanges at Poplar Ridge, Aurora, Union Springs, Fleming, Venice, King Ferry, Scipio, Cayuga and other villages in Cayuga county. Rural lines will also be built to Genoa, Venice, Ledyard, Springport and other places. The directors of the new company are R. B. Fegan, Samuel Jeffrey, L. H. Williams and G. W. Jeffrey, of Ithaca, and I. P. Hazard, Isaac Hazard, Jr., and Chas. M. Hazard, of Poplar Springs.

MILNOR, N. D.—The Milnor Rural Telephone Company has been incorporated with a capital stock of $10,000. Among the incorporators are Arnold Christensen, Edgar Christensen and M. Christensen, all of Milnor, N. D.

FIAT, O.—The Fiat Telephone Company has filed articles of incorporation. The capital stock is placed at $500, and the incorporators are Peter Hahn, Cyrus McQueen, W. D. Lint, A. L. Eckert, John Eckert, Philip Hahn, J. D. Thomas and Jacob Stein.

GALENA, OKLA.—Articles of incorporation have been filed by the Wild Cat Telephone Company of Galena. It has a capital stock of $2,500, and among the incorporators are John G. Corbin, M. S. English and F. Strong.

LAWTON, OKLA.—Articles of incorporation have been filed by the Sulphur Springs Rural Telephone Company, of Lawton. It has a capital stock of $1,000, and the following directors have been named: H. O. Miller, L. T. Dawes, F. H. Beady, J. E. Trevar, S. L. Fargunar, of Lawton.

CONDE, S. D.—An Independent telephone company, to be known at the Conde Telephone Company, with headquarters at Conde, has been organized by A. Lewis, B. R. Cowan, E. H. Smith and H. P. Hildebrand. Its authorized capital stock is $50,000.

HAYES, S. D.—The Homestead Telephone Company, of Hayes, has been incorporated with the intention of connecting with the Bad River lines. The incorporators are A. R. Beal, W. A. Hopkins and J. D. Rainey.

WESTMORELAND, TENN.—The Sumner County Home Telephone Company, with a capital stock of $10,000, has been organized. This company succeeds the Westmoreland Telephone Company. The new company will have connections with several other Independent companies. The incorporators are C. W. Caldwell, W. L. Wilder, P. C. Anglea, S. W. Brown, F. L. Link and Bascom Simmons.

PULLMAN, WASH.—The Breeze-Burgan Telephone Company, of Pullman, has been incorporated with a capital stock of $3,000. The incorporators are S. H. Breeze, E. R. Young and others.

CORNUCOPIA, WIS.—An Independent telephone company has been formed at Cornucopia, and connections are to be made with Washburn.

CHARLOTTETOWN, P. E. I., CAN.—An Independent telephone company is being organized by the business men of Charlottetown and Halifax, to establish connections by laying a cable under the Straits of Northumberland.

FRANCHISES.

SULPHUR, I. T.—A franchise to construct a telephone system at Sulphur has been granted to E. J. Hines, of Tulsa.

KINSLEY, KAS.—A franchise has been granted at this city to the Kansas Telephone & Telegraph Co.

MARSHALL, MO.—An application for permission to build and maintain a telephone exchange at Marshall has been applied for by E. M. Ingleheart, of Miami.

PASCO, WASH.—A franchise has been granted to A. J. Newton to construct and operate a telephone system at Pasco.

FINANCIAL.

MASCOUTAH, ILL.—The capital stock of the Looking-glass Prairie Telephone Company has been increased from $10,000 to $20,000.

RUTLAND, ILL.—The Central Illinois Independent Telephone Company has increased its capital stock from $30,000 to $75,000.

WINDOM, KAS.—The Windom Telephone Company has increased its capital stock to $5,000, and expects to extend its line to Inman.

LOUISVILLE, KY.—A quarterly dividend of 1 per cent. on its capital stock has been declared by the Louisville Home Telephone Company.

MAYFIELD, KY.—The Lilly Telephone Company has increased its capital stock from $6,000 to $12,000.

WILLIAMSBURG, KY.—The stock of the Williamsburg Home Telephone Company has been increased from $5,000 to $10,000.

HIGHLAND, N. Y.—The Highland Telephone Company has voted to increase its capital stock from $40,000 to $75,000.

EAST TROY, WIS.—The capital stock of the East Troy and Eagle Consolidated Telephone Company has been increased to $30,000.

FOOTVILLE, WIS.—The Footville Telephone Company has increased its capital stock from $10,000 to $15,000.

FREISTADT, WIS.—The Freistadt and Cedarburg Telephone Company has filed articles of amendment increasing its capital stock from $500 to $3,000.

COMBINATIONS.

DAYTON, O.—The stockholders of the Home Telephone Company are considering a proposition to take over the property and franchises of the Montgomery County Telephone Company.

OLD FORT, O.—The Home Telephone Company, of Gibsonburg, has sold its plant at Old Fort to the Old Fort Mutual Company, the consideration being $3,200.

ELECTIONS.

POMONA, CAL.—The following officers have been elected by the Pomona Valley Telephone & Telegraph Company; F. W. Thomas, president; J. A. Dole, vice president; C. E. Walker, treasurer; A. M. Dole, secretary.

NEWS—WANTED

THE matter contained upon the message and Operating Field pages of this paper is contributed largely by our special correspondents. We believe, however, that there are many valuable items of telephonic interest which are never brought to the attention of the public. There is no reason why this condition should exist, and the Editor, therefore, invites all telephone companies and the officials of such companies, to furnish any information that they can consistently make public relative to financial statistics, new construction, elections, franchises and personal items.

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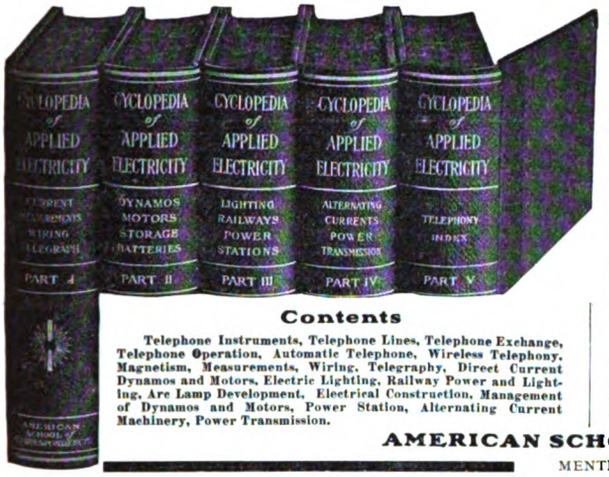

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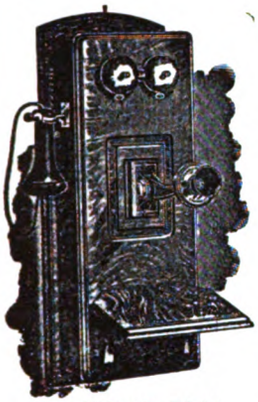

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THE WEEK'S MESSAGES

BONDVILLE, ILL.—The following officers have been elected by the Bondville Telephone Company: President, W. H. Scott; vice-president, O. T. Bell; treasurer, P. M. Jacobs; secretary, O. W. Norton; manager, G. L. Siefkin.

PONTIAC, ILL.—At Pontiac the following officers were elected by the Indian Grove Farmers Central Telephone Company: President, W. Henderson; vice-president, Elmer Crouch; secretary, M. N. Jones; treasurer, Ben Cumpston.

PETERSBURG, IND.—The Pike County Telephone Company has named the following officers: President, J. W. Coleman; secretary, W. D. Goad; treasurer, G. J. Nichols; manager, C. H. Webb.

HANLONTOWN, IA.—At a recent meeting of the board of directors of the Hanlontown Co-operative Telephone Co., K. O. Burtness was chosen as president, and N. W. Phillips as secretary.

LOVELL, ME.—The following directors have been elected by the Independent Telephone Company of Lovell: C. P. Hubbard, W. C. Bassett, O. E. Andrews, J. A. Jones and A. R. Shirley.

WINTHROP, MINN.—The Peoples Independent Telephone Company has elected the following officers: Henry Witte, president; C. M. Peterson, vice president; C. A. Benson, treasurer; J. A. Larson, secretary and manager.

MIDDLETOWN, N. Y.—The Middletown Telephone Company has elected Dr. M. C. Conner, president; Dr. Edwin Fancher, vice-president; Geo. B. Potter, treasurer; W. C. Ramsdell, secretary.

ANTWERP, OHIO.—The following officers have been elected by the Antwerp Telephone Company: President, P. P. Doering; vice president, C. A. Lindemuth; secretary and treasurer, J. H. Finley.

HURON, O.—The following trustees have been named by the stockholders of the Erie County Mutual Telephone Company; T. M. Clock, N. E. Woessner, A. P. Herman and Harry Cook, of Huron; Messrs. Ritz, Hein and Lander, of Shinrock.

SHERWOOD, O.—The Mutual Telephone Company has elected Henry Huston, president; secretary, Chas. Coffin; treasurer, Geo. Kellermeier.

MISCELLANEOUS.

WOLF LAKE, IND.—Connections are to be effected by the Whitley County Telephone Company, of Etna, with the Noble County Telephone Company, at Wolf Lake.

TONGANOXIE, KAS.—The Tonganoxie Telephone Exchange has been purchased by F. B. McKinnon, of Lawrence, who will make many improvements in the plant.

PERSONAL.

ROY OWENS has recently been promoted to the position of superintendent of the Columbus Citizens' Telephone Company, Columbus, O. About five years ago Mr. Owens started on assembling and testing work for the Automatic Electric Company, of Chicago, and afterward worked as installer and inspector on most of the company's large installations and cut-overs up to the time he became connected with the Citizens' Company. He has been with this organization for about a year and a half, and is known as one of the most enthusiastic and capable automatic men in the country.

D. G. RALEY has been appointed general manager of the northern division of the Columbiana County Telephone Company, which includes exchanges at Salem, Sebring, Leetonia, Lisbon, East Palestine, Columbiana and New Waterford, Ohio.

DAVID EIDLEBACH has been appointed manager of the exchange of the Southwestern Telephone and Telegraph Company at Flatonia, Texas.

New Construction in the Field

SANTA ROSA, CAL.—The Rural Telephone Company expects to build lines to Melitta and other points.

MONROE, GA.—New lines are being constructed by the Bold Spring and Monroe Telephone Company.

BYRON, ILL.—Among the improvements planned by the Byron Telephone Company is the installation of a new switchboard.

CANTON, ILL.—The lines of the Canton, Sugarville & Fairview Telephone Company are being rebuilt.

GRANTFORK, ILL.—The Grantfork Rural Telephone Company expects to build fifteen miles of new line.

MACOMB, ILL.—The Farmers' and Merchants' Telephone Company is about to commence the construction of its system at Macomb.

EAST ENTERPRISE, IND.—It is the intention of the Farmers Mutual Telephone Company to install a new switchboard.

ELKHART, IND.—Many improvements are to be made in the plant of the Home Telephone Company.

JAY, IND.—The Farmers Telephone Company is at work on the construction of its system.

SHEFFIELD, IA.—The Mutual Telephone Company contemplates making many improvements and extensions in its system.

LOUISVILLE, KY.—Many improvements are to be made in the plant of the Home Telephone Company at Louisville.

MT. VERNON, ME.—Preparations are being made by the Mt. Vernon Telephone Company for the extension and improvement of its system.

DEXTER, MICH.—The Washtenaw Home Telephone Company is building lines in and about Dexter.

OXFORD, MICH.—Many improvements and alterations in its system are contemplated by the Oakland County Telephone Company.

HIBBING, MINN.—The Hibbing Telephone Company, which has recently installed a new switchboard, expects to build additional lines.

NORTHFIELD, MINN.—New lines are to be erected by the Northfield Telephone Company in this city and vicinity.

ST. JAMES, MINN.—About thirty-five miles of new lines are to be erected by the St. James Telephone Co.

BLAIR, NEB.—The Blair Mutual Telephone Company expects to greatly improve and enlarge its plant.

OMAHA, NEB.—Actual work on the plant of the Independent Telephone Company will be commenced at once.

OVERTON, NEB.—Many improvements are to be made by the Independent Telephone Company in its plant at Overton.

ELY, NEV.—It is the intention of the White Pine Telephone Company to spend about $50,000 in extending its lines.

FARGO, N. D.—The long distance service of the North Dakota Independent Telephone Company is being extended. A local system has been installed at Cleveland, and toll connections are to be established with Bowdon and Sterling.

CELINA, O.—A line to Celina, O., has been erected by the Eastern Indiana Telephone Company, where connections are to be made with the United States Telephone Co.

LORAINE, O.—The Mississippi Valley Telephone Company, of Carthage, has established a new exchange at Loraine.

KUTZTOWN, PA.—A line to Topton is one of the improvements planned by the Consolidated Telephone Company.

MEADVILLE, PA.—A private telephone system for the Erie Railroad Company is to be installed.

NAZARETH, PA.—Among the improvements recently made by the Slate Belt Telephone Company was the installation of a new switchboard.

CANOVA, S. D.—The Nansen Telephone Company is making preparations to construct about seventy-five miles of new rural telephone lines. These lines will be in Clearwater, Henden, Adams, Grafton and Belleview townships.

LYNNVILLE, TENN.—Considerable construction work is being done by the Home Telephone Company at Lynnville.

SALT LAKE CITY, UTAH.—The Eastern Utah Telephone Company is preparing to install a local system at Castledale, which will connect with Salt Lake City and all of the Carbon county mining camps.

ANACORTES, WASH.—The Farmers' Mutual Telephone Company, of Everett, is planning many improvements at Anacortes.

PUYALLUP, WASH.—The plant of the Puyallup Telephone Company is being thoroughly overhauled.

CAMBRIDGE, WIS.—The lines of the Kegonsa Telephone Company are being extended to Stoughton.

MARQUETTE, WIS.—The installation of a new switchboard and other improvements are planned by the Marquette Telephone Company.

SULLIVAN, WIS.—The Sullivan Telephone Company is extending its lines to Maple Grove.

WELCOME, WIS.—The Matteson Telephone Company expects to build new lines to Symco and Leeman. A new exchange is also to be established at Welcome.

WOSTOK, ALB., CAN.—The Lamont Telephone Company, whose line extends to Star, is building a line to Wostok, and also expects to build lines to Andrew, Hunka, Pakan, Whitford and Skarp.

MONTREAL, QUE., CAN.—The Dominion government expects to build a telephone system along the banks of the St. Lawrence River, to be used in connection with navigation. The estimated cost is $18,000. Address Hon. Brodeur, Minister of Marine and Fisheries, Ottawa, Ont.

YORKTON, SASK., CAN.—The ratepayers have decided in favor of the town controlling the system of the Yorkton Northwestern Telephone Company. A number of extensions are planned, including lines to Canora, Saltcoats, Cressient and other towns in the district. Address W. D. Dunlop, mayor.

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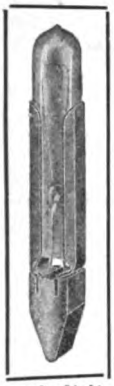

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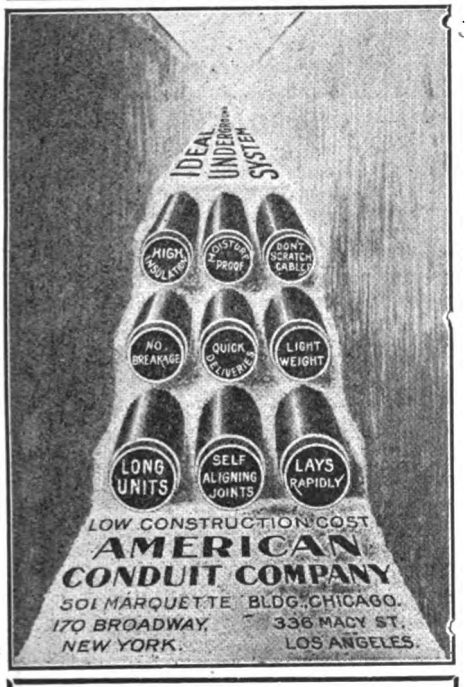

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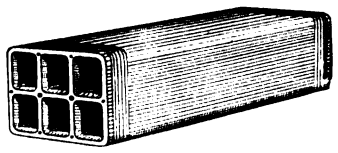

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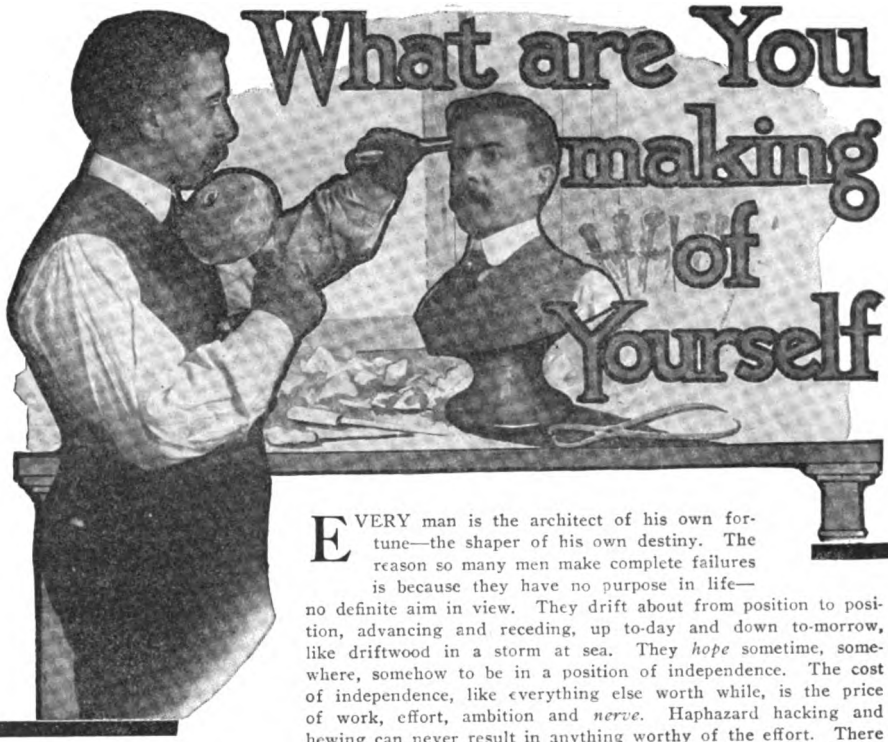

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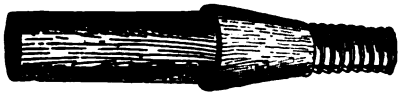
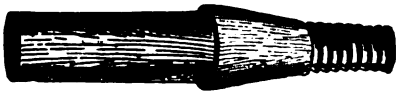
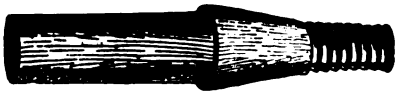

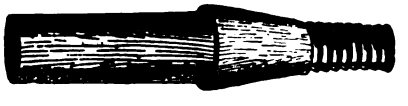

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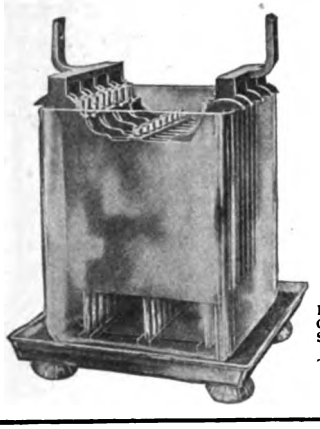

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Take one of your busy 4-party lines and equip it with "POOLE" Lock-Outs. Leave it in service a month and then see how many of the four will stand a raise of $3.00 a year rather than go back to the old way. We know the answer, but we want your subscribers to impress on you the fact that the "POOLE" Lock-Out is a rate-raiser.

It won't cost you anything to try it, because we will loan you the Lock-Outs free and there is no other equipment required. Write today for our Booklet AL-2.

Mountain State Electrical Company

WHEELING, W. VA.

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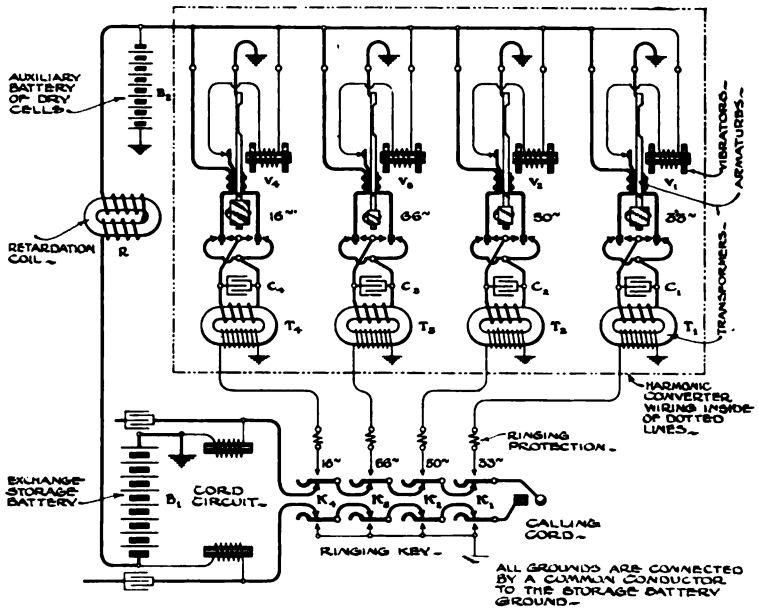
DEAN TELEPHONE APPARATUS



Theoretical Circuit Dean 5 Contact Type Harmonic Converter.

A Party Line Selective Ringer

THE DEAN HARMONIC CONVERTER VIBRATORS

This harmonic converter operates from any direct current source and is made for any size exchange, local or common battery, requiring only one fiftieth of the current consumed to operate a motor generator set of equal capacity. The vibrators (four in number for a 4-party selective ringing) are made from the best material obtainable, being mounted on individual high grade slate bases and so mounted, in a highly finished cabinet, as to be practically noiseless in operation. All parts are standard and interchangeable. The insulation is extremely high and the spring contact points are made of very heavy platinum.

Those interested in LARGE or SMALL exchanges will find it to their advantage to investigate the Dean Harmonic Vibrator and compare it with their present ringing machines. Bulletin 102B mailed upon request.

Factory and General Office
Elyria, Ohio

Branch Office
Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
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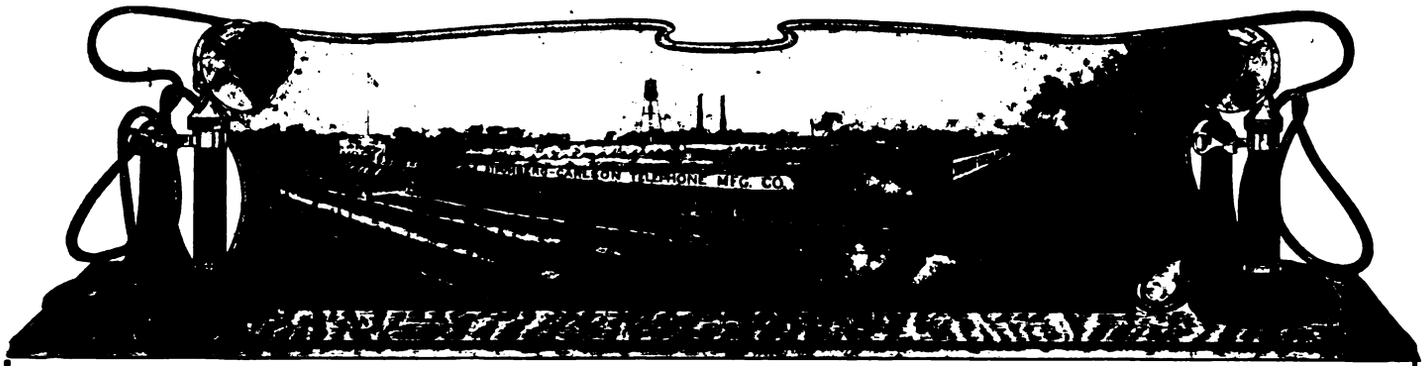

BRIDGING TELEPHONES

"COMPACT TYPE"

STANDARD EQUIPMENT

¶ RINGERS No. 6-A-1000 ohms, No. 6-C-1600 ohms and No. 6-E-2000 ohms furnished as required.

¶ GENERATORS No. 23-4 Bar and No. 24-5 Bar furnished as required.

¶ RECEIVERS of the No. 3-A type (see illustration) and No. 6-A All Rubber type with pure rubber shell and ear cap, or composition shell and ear cap, furnished as required.

¶ Unless otherwise specified, Green Silk Receiver Cords are furnished with all Stromberg-Carlson Magneto Telephones.

SPECIAL EQUIPMENT

¶ The "Non-Interfering" or key to ring central over one side of line and ground. To ring any other subscriber without calling central or ring central without calling any other subscriber. **Order with Push Button Key.**

¶ The "Sure Ring" or "Ring Thro" feature employs a Condenser in the receiver circuit to permit ringing subscribers when receiver is left off hook. **Order "Sure Ring" Condenser.**

¶ A combination of the "Sure Ring" and "Non-Interfering" may be furnished. **Order Condenser and Push Button Key.**

¶ Bridging Telephones of Stromberg-Carlson Quality successfully perform telephone service indefinitely.

¶ When ordering your requirements for the coming season it will pay you to order the best.

¶ Prices and quality will convince you of their superiority.

WRITE EITHER OFFICE TO-DAY FOR BULLETIN A-19 AND LATEST PRICES

STROMBERG-CARLSON TELEPHONE MFG. CO.

ROCHESTER, N. Y. CHICAGO, ILL.

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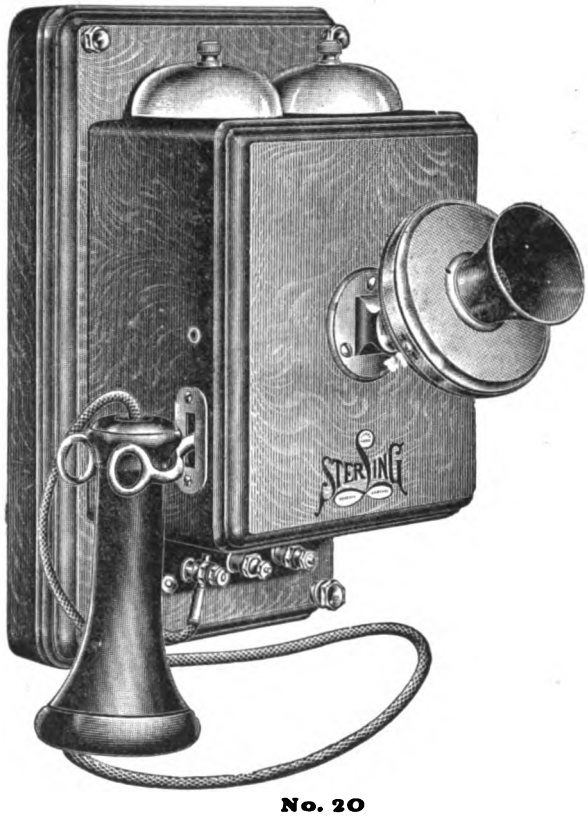
TO COLLECT RENTALS?

TO PLEASE SUBSCRIBERS?

TO PAY DIVIDENDS?

TO BUILD UP YOUR PLANT?



"GOOD GOODS"

No. 20

ARE YOU UP AGAINST IT? IF SO, PUT IN Sterling Phones

They will act like oil on a stormy sea

THEY DO NOT GIVE TROUBLE

Sterling Electric Co.

La Fayette, Ind.

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ON ACCOUNT OF THEIR PECULIAR DESIGN, THE CLIPS SPRING TOWARD THE BLADE AND MAKE A PERFECT SELF-ADJUSTING CONTACT. LOTS OF OTHER POINTS TOLD IN BULLETIN.

RECESSES IN THE BASES HOLD CLIPS FIRMLY AND KEEP THE ALIGNMENT.

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TRUMBULL TELEPHONE SWITCHES

THE TRUMBULL ELECTRIC MFG. CO.

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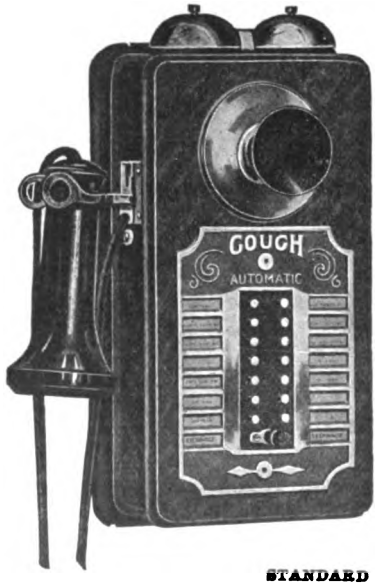
Rent your subscribers a system of



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with trunk button for exchange connection.

It's an "operator-less" private branch exchange, giving automatic intercommunication between departments.

Any station can secure immediate city exchange connection by the pressure of the trunk button.

Ask us about it

STANDARD SIZES:

8	intercommunicating buttons,	1	exchange button		
14	"	"	1	"	"
18	"	"	1	"	"
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28	"	"	1	"	"

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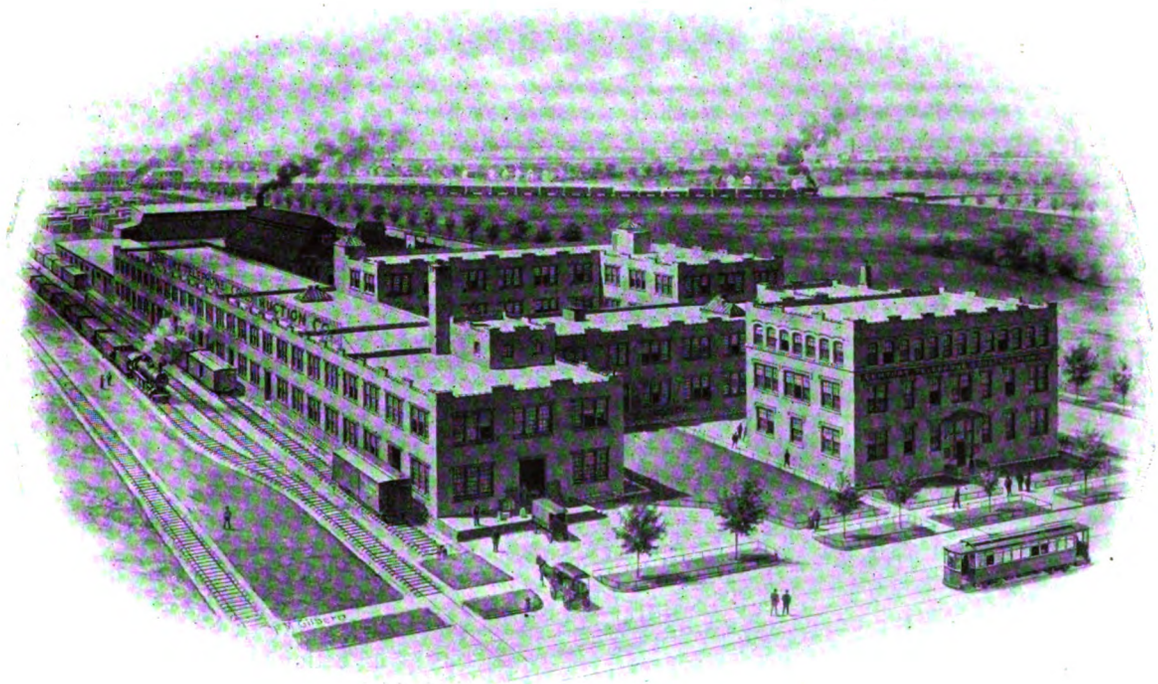

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BUFFALO, N.Y., U.S.A.

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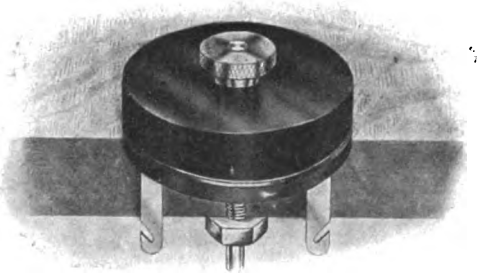
TELEPHONE APPARATUS

KELLOGG COMPACT DRY CELL TYPE TELEPHONES

CONTAIN THE KELLOGG LIGHTNING ARRESTER



Our No. 3 Arrester, furnished on all our telephones, is of the self-contained type with terminals made to be projected through the woodwork and soldered to the line binding posts of the telephone. The Arrester is fastened in place by a hexagonal nut screwed down from the ground terminal and no electrical connections are dependent on the woodwork for good contact. The mica separator is held in place under the carbon block by a hexagonal nut directly opposite to that previously mentioned. It cannot become misplaced. The carbon block is made in disc shape and supported in the center, making the cleaning of the Arrester from carbon dust very easy.

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THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
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It protects both patron and company.

It keeps collections right.

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THE
United States Coin Register Co.
TOLEDO, OHIO

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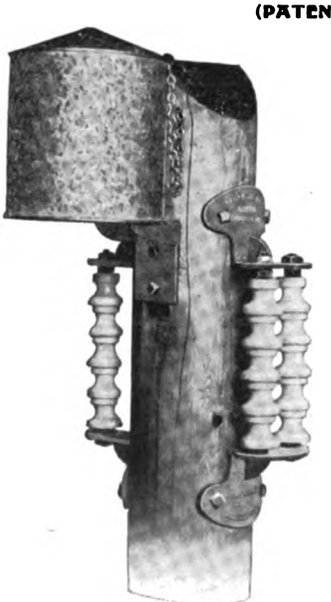

This cut shows the ROBINSON RACK as used in connection with Can Top. Its extreme flexibility makes the Robinson Rack a most desirable method for distribution. No waste of insulation. Costs 50 per cent less than circle top. Easy to trace circuits. Can distribute five pairs from one side of pole; ten pairs from opposite side. Notice special drip feature.

Let us send you circulars and prices.

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BECAUSE it gives more service, better service, prompter service, more accurate service than a manual system (and also an absolutely secret service, which no manual system can give) and

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TO SUM IT ALL UP, the AUTOMATIC TELEPHONE SYSTEM produces a better telephone service, commanding a higher price, at less cost than inferior service can be produced for by a manual system.

THAT IS THE REASON WHY the AUTOMATIC TELEPHONE SYSTEM makes the securities of the company using it safe, stable and profitable, and why it has been adopted by the Independent telephone companies in the following cities:

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Auburn, N. Y.
Battle Creek, Mich.
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Bellingham, Wash.
Butte, Mont.
Cadillac, Mich.
Champaign, Ill.
Chicago, Ill.
Cleburne, Texas.
Columbus, Ga.
Columbus, Ohio.
Dayton, Ohio.
Denver, Colo.
El Paso, Texas.
Emaus, Pa.
Fall River, Mass.
Grand Rapids, Mich.
Hastings, Neb.
Havana, Cuba.
Hazleton, Pa.
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Hopkinsville, Ky.
Jonesboro, Ark.
Lake Benton, Minn.
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AUTOMATIC ELECTRIC CO.

Van Buren and Morgan Sts., Chicago, U. S. A.

Our Price is Right

1st TELEPHONE MADE

with all connecting wires, binding posts and terminal screws fully concealed

To Prevent Trouble

and with no exposed metal parts in the circuit to

Avoid Danger

from lightning while using the instrument. Send us your inquiry and we will "SHOW-U" at our expense an interesting proposition.

INTERNATIONAL TEL. MFG. CO.
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Operator's Revolving Chair

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Steel Foot Rest—Seat and Back readily adjustable to occupant—Height of Chair easily regulated. Frame work made of Bessemer Steel, ⅜ (three-eighths) inch rods twisted and interwoven. Wood work, oak, birch or mahogany finish, as preferred. Metal work heavily plated, Japanese copper finish.

The Most Comfortable High Chair Made

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Nothing to get broken

24-inch high 28-inch high
Warranted for 10 years. Send for complete Catalogue and Prices

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All With The

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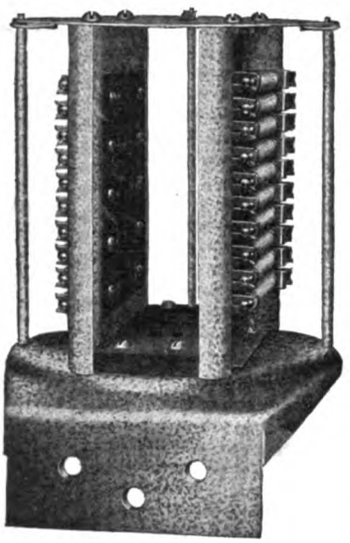
Cook's All Metal Terminals



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These terminals are constructed entirely of pressed steel—no castings. Light in weight and very strong. Frost or handling cannot break them.

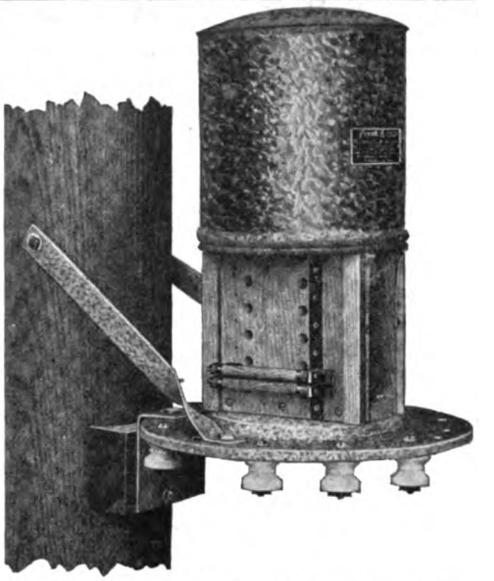
Absolutely no woodwork to swell, split or warp.

Covers slide up and down easily and will not stick in damp weather.

Equipped with individual protector mounts. Buy what you need—add when you want.

Heavily galvanized so they will not rust.

Better Terminals at the Old Prices—No Increase.



Type T 17—A Combination of Terminal and Distributing Ring. Made in All Metal. For Side of Pole.

Frank B. Cook. MFR.

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"QUALITY" IN A DRY BATTERY

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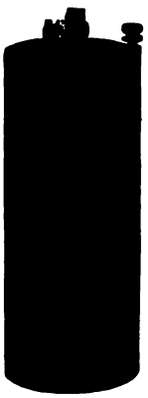

"1900"

STANDS FOR

"QUALITY"

Do not Fail to Specify The "1900" When Ordering Dry Batteries

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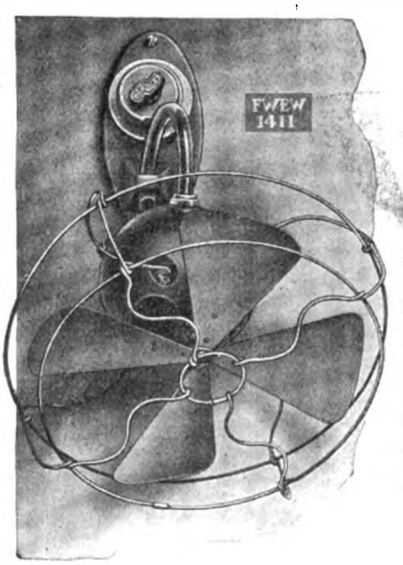
Fort Wayne Electric Works

"WOOD" SYSTEMS



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Just Fans

Those Fort Wayne universal bracket fan motors that gave so much "Summer Comfort" last season. The breeze can be directed in any direction vertically or horizontally. No thumbscrews or other complicating adjustments to get out of order.

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Your own fault if you don't.

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Charges for all overtime use of a toll line.
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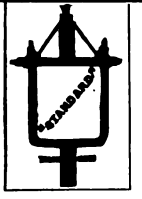

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Aerial—Underground—Submarine Lead Covered Cables

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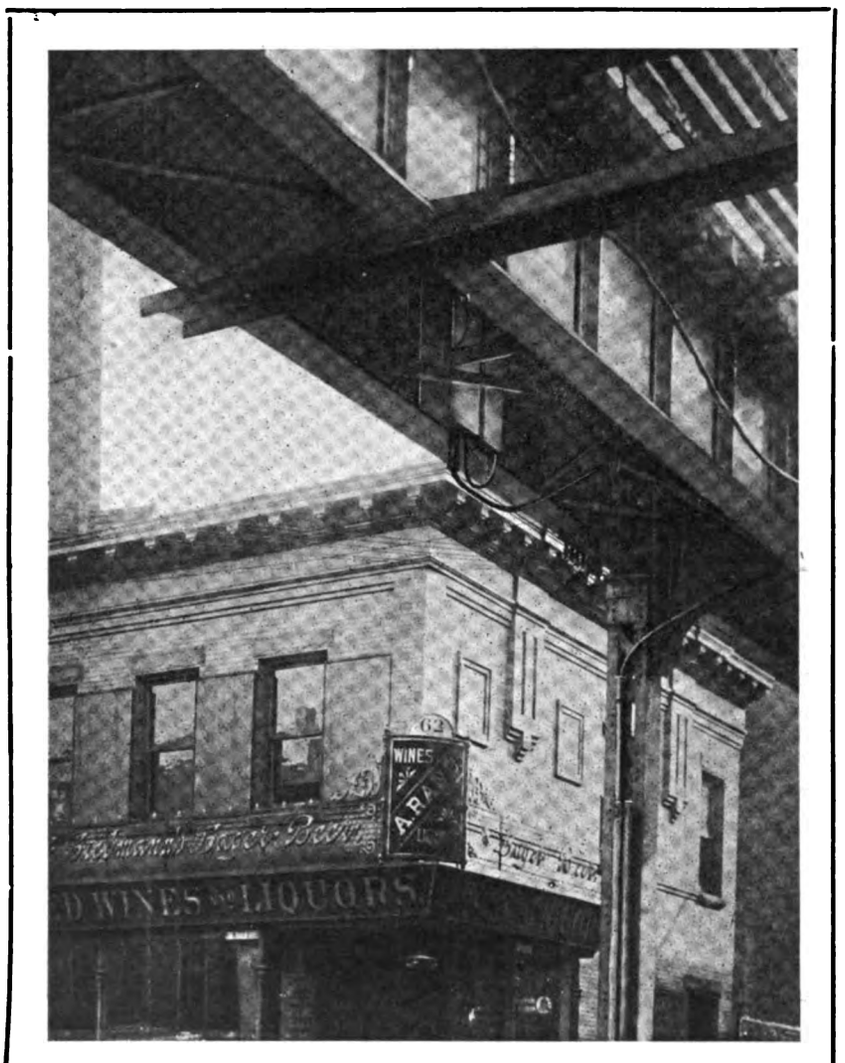
VOLUME XV. SATURDAY, APRIL 13, 1907. NUMBER 15

Elevated Railroad Distribution of Telephone Wires in Brooklyn

By Walter Graham.

BROOKLYN, N. Y., is a city which has a very extensive system of elevated railroads, which starts from the Brooklyn Bridge, by which connection is made with the transportation systems of New York City, and traverses the entire borough, extending out into some of its most populous suburbs and covering approximately 68 miles of trackage. This system, started in the early '80's, was first equipped with small steam engines designed after those in use at that time on the elevated railroads of New York, but during the years of 1901-2 it was completely overhauled, equipped with electrical appliances, and converted into an electric road with the customary motors, third rails, etc. At the time when this system was built the telephone company, then an infant concern, had pole lines on many of the streets paralleling the railroad. These pole lines carried numerous grounded circuit lines and were built in a manner which would now be classed as antique construction. The wires distributing from these poles were a continued source of annoyance to the patrons of the elevated road, especially during stormy weather, when they would frequently come tumbling down across the tracks and tie the road up for several hours at a time. These annoyances were borne by the people of Brooklyn for a while, but so many protests were made that the elevated railroad officials began to fume and fuss to have the pole lines abolished. After much parleying over the matter a solution finally loomed in sight and both the railroad officials and the telephone company decided to adopt the scheme of using the elevated structure to support wires and cables in place of the existing pole lines. By this plan the wires could be placed in a position where it would not be necessary for them to be carried above the tracks in any part of the system, doing away with all risk of impeding traffic.



A Typical View of Telephone Cable Led Up to Distributing Box on Brooklyn Elevated Railway.

This scheme was then being used along the roads on Manhattan Island and was considered to be a very efficient and practical method of distribution. At that time it offered so many advantages over the old method that both companies readily saw the benefits to be derived by them and an agreement was duly made giving the telephone company necessary permission to use the structure under certain conditions. Certain stipulations relating to the number of open wires and size of cables, etc., were of course incorporated in the contract.

Those telephone men who take a fair and somewhat reasonable attitude in judging the results, from information now available, are all ready to admit that this method was a good one some years ago when telephones were scarce in Brooklyn; but when the wires are seen to-day, deteriorated by long service and strung carelessly from the structure to the various buildings en route, in many instances without proper supports, telephone men are equally ready to condemn the method as a defacement to a structure in sight of nearly the whole community and likely to be dangerous in some respects.

(To be Continued.)

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The Ohio Convention

By L. A. Parrish, Special Correspondent.

THE annual convention of the Ohio Independent Telephone Association, held March 28, at Columbus, was devoted strictly to business. Every county except Hamilton was represented. There were Hamilton County men present, however, but not as official delegates representing a full county organization. President Beam introduced Mayor DeWitt C. Badger of Columbus, who expressed his pleasure at the presence of the telephone men in the city.

Frank L. Beam, Re-elected President of the Ohio Association.

Dwight E. Sapp of Mt. Vernon responded to the address of Mayor Badger in a forceful and eloquent address.

Mr. Sapp was one of the original projectors of the movement and he told the story of the early struggles leading to the present triumphs of the Independents. Mr. Sapp said that when the first meeting of Independent telephone men was held in a back room of the Chittenden Hotel, April 12, 1895, there were but three Independent exchanges in Ohio and these were at Mt. Vernon, Norwalk and Chillicothe. To-day, he said, the combined capital stock of the Independent telephone lines of Ohio is over $35,000,000. The three exchanges have grown into a system having 835 exchanges, and there are now 1,663 toll stations, while the number of telephones in service in the Buckeye State is 270,720. The number of stockholders has risen from a hundred to 24,050. Independent lines and exchanges are now serving every county of the 88 counties in the State except Hamilton County.

The annual address of President Frank L. Beam showed in detail the work he has carried on for the Association during the past year, as well as the amazing progress made. He said that the strenuous competition of the past year has not only improved the telephone service but it has lessened prices. Securities of Independent companies have advanced to a point where no better securities can be found on the market than theirs. Although so much has been done in the past he urged continued activity, and the most hearty co-operation among officials and stockholders until the State shall be fully developed. He said that at the present time every county except Hamilton shows a network of Independent wires. Even Hamilton County has a few Independent lines, and will inevitably be fully built in the future as the interests of the business men require such connections. His address was most enthusiastically received and heartily applauded by the members at its close.

W. Gilbert Thompson, Manager of the Hamilton Home Tel. Co., Who Took a Prominent Part in the Proceedings.

The following committees were named by President Beam to assist in expediting the work of the convention:

Auditing—George H. Metheany, Lima; J. B. Rhodes, Zanesville; George A. Ford, Toledo.

Nominations—R. E. Hamblin, Toledo; A. J. Cullen, Elyria; G. A. Thorpe, Wilmington.

Legislation—W. G. Thompson, Hamilton; Dwight E. Sapp, Mt. Vernon; Joseph L. Brailey, Jr., Toledo; Frank A. Davis, Columbus; C. Y. McVey, Cleveland.

Constitutional Amendments—W. L. Carey, Jr., Cleveland; H. P. Folsom, Circleville; H. C. Devine, Mt. Vernon.

The secretary of the Association, O. O. Welsheimer, said he was not quite prepared to make his report to the convention owing to the fact that through the floods and other contingencies reports to him had been delayed. He promised that a full and complete report of all the transactions of their representatives would be mailed within 60 days.

Treasurer Ralph Reamer reported that the outlook financially was good.

President J. B. Hoge of the International Independent Telephone Association opened the afternoon session with a statement of present conditions of the telephone business from the standpoint of the International organization.

Unusual interest was shown in the address of J. H. Ainsworth of Dayton, superintendent of the Independent system of that city. Until a year ago, Mr. Ainsworth was one of the most ardent advocates of the single telephone system. As manager of the Bell system of Columbus, for a number of years in Columbus, he was one of the most prominent opponents of the Independent movement in Ohio. He said, in part, on the subject "Changed Conditions":

Ralph Reamer, Re-elected Treasurer of the Association.

"I think your Honored President had designs in inflicting me upon you with such a subject, because he knows of my own recent change of condition, for, as an Independent telephone man, I am only nine months old. I began my telephonic managerial experience in 1888 with the Bell company in a town of 4,000 population, and my first exchange had just 29 subscribers (not counting extensions as is present Bell practice). The rates were $48.00 per year for business and $36.00 per year for residence within ¼ mile of the central office, and, although we had party lines, they were not operated on the give and take principle as

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now—the company saving its cable and pole line and switchboard space and granting the subscriber a better rate because of the character of the service—not on your transmitter—they charged you more the farther you were away, and I had one subscriber who paid $9.00 per month, but conditions have changed.

"Those were the days of the Blake transmitter, which worked so well that when this subscriber of mine, whose office was just across the street, talked to his $9.00 per month telephone at his coal mine, he might just as well have stuck his head out of the window and conversed with the wide, wide world, and his conversation was almost a disturbance to the neighborhood, it was necessary to talk so loud. But conditions have changed, and he now talks with his people over long distance transmitters, and transmitters, thank goodness, good transmitters, made west of the Hudson River. Those were days when a manager did not dare to order a new set of instruments until he had a contract signed up, binding the prospective subscriber down hand and foot, lest he change his mind, refuse to take the instrument and the poor, struggling licensee company have to pay the royalty anyhow, at least until the instrument could be sent back to Milk street.

"Changed conditions in the business brought changed positions to me. Competition came in and I grew strong in argument against the double telephone nuisance, the useless waste of money, the economic mistake, the step backward in telephone practice, which was embodied in the competitor, enlarged upon his lack of knowledge, and of money and men, and I came to this city of Columbus. Here in my office one day, as I conversed with a prominent man and pointed out the misfortune of double telephone service, in the midst of a statement that it was financial foolishness and telephonic folly to keep two telephones, he stopped me and said, 'How many telephones have you in Columbus?' I answered, '9,000.' 'How many has the Independent Company in Columbus?' said he, and I answered 'approximately 9,000.' 'How many are duplicates,' he asked, 'that is, how many keep both?' I answered 'about 2,000.'

"'Can it be possible, then,' said he, 'that you each serve me with exclusive connection with 7,000 business houses and families?' I said, 'yes.' 'And is it not true,' said he, 'that I should be able to reach with greater ease the 2,000 business houses and families which have both telephones?' Again I answered truthfully 'yes.' 'Then,' said he, 'I am actually getting for the money I pay connection with 18,000 telephones in all, or 16,000 not counting the duplication. Now,' he continued, 'let's see —I pay your company $60.00 per year and I pay the Citizens' Company $40.00 per year, which makes $100 per year, or a little more than 5½ mills per telephone per year. Before the Citizens' Company started I paid the Bell Company $72 for a Blake transmitter with a noisy circuit, received connection with, as nearly as I can remember, from 1,200 to 1,800 telephones. Then the long distance transmitter came in and I paid $96.00 per year for a long distance equipment and a metallic circuit, and was given connection with from 1,800 to 4,000 subscribers, or at the rate of 2 4-10 cents per telephone per year. Now, unless I am badly off in my figures, I seem to be getting for $4.00 per year more than I formerly paid, not only connection with the 4,000 whom I already reached, but 12,000 on top of them.'

G. R. Johnston, General Manager Columbus Citizens Telephone Co., Who Contributed Much to the Success of the Meeting.

E. L. Barber, of Wauseon, Who Has Built Up Many of Ohio's Successful Telephone Companies.

J. B. Rhodes, of Zanesville, Who Represented District No. 3.

"What is true of Columbus is true of every other town where the Independent company has come to the rescue of the people, and Cincinnati's business men are beginning to realize that they have been buncoed too long. Cincinnati, thinking herself alive, is telephonically ten years behind her sister cities, and, at a conservative estimate, is losing the appalling sum of $10,000,000.00 yearly in trade, and millions more in excessive telephone charges. Unless she gets right on the telephone question, along with Omaha, Denver, Chicago, Milwaukee, Cleveland, Pittsburg, St. Louis, Buffalo, Philadelphia, and even Boston unless she recognizes the changed conditions, she will be run over in a business way."

Cyrus Huling of Columbus contributed an instructive address on telephone securities, comparing the present demand for telephone stocks with the trouble financiers had ten and twelve years ago in floating the paper of any new telephone venture. Mr. Huling has made a study of this question and his conclusions on the subject were received with considerable pleasure and profit.

With considerable applause and expressions of approval Mr. Stacey B. Rankin of South Charleston presented his views on "Co-operation between Local and Long Distance Companies."

Mr. Rankin said: "Many local companies do not give proper attention to maintenance of instruments and switchboards; allowing batteries to become worn out; allowing dust to accumulate in the jacks and drops of the switchboard; also allowing the slack to remain in the lines; not properly guying corners; not properly insulating local lines away from the high potential currents and trees; also allowing cables to become grounded, making noisy lines, and many conditions of this sort. The only way to give first class long distance service is, that local com-

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panies, as well as the long distance lines, be in first class working condition. Local companies should build with good sized wire, properly insulated and away from high tension wires."

Mr. Rankin advised the men to look after all these points and the weak links would disappear.

He also suggested that mutual care and attention in every particular should be given by all to every call and thus increase harmony, efficiency and business.

One of the most vigorous and energetic addresses of the day was by James S. Brailey, Jr., of Toledo. Mr. Brailey's subject was "The Independent Telephone in the Public Eye."

Mr. Folsom made an eloquent plea for the Independent telephone men to get together and prevent any inroads into their ranks. He urged the members to get together on the line of policy to be pursued and stand loyally with one another.

Judge C. B. Matthews of Cincinnati, attorney for the Queen City Telephone Company, was introduced by President Beam to talk on the subject "Telephone Law in Ohio." In opening his address Judge Matthews said;

"I have thought the patent office fails in one of its most important objects, namely, to stimulate and reward inventors and thus subserve the good of the people. In 75 cases out of 100 I have observed, especially in the most valuable and important, the inventor dies in poverty, while some grasping money shark or corporation has garnered in the millions."

The speaker then showed some of the injustices of the laws of Ohio and lucidly explained the situation in Cincinnati, where the injustice of the law relating to the placing of conduits underground was shown up. Judge Matthews gave a history of some of the legal obstacles thrown in the way of the Independents in the recent contest waged by the Independent company to force an entrance into Cincinnati.

He urged the Association to be alert in watching future legislation and to strive to repeal the obnoxious and unfair laws evidently placed on the statute books by influences hostile to Independent telephone companies.

W. W. Fisher of Bellefontaine then addressed the convention on the subject of consolidation of the interests of Independent telephone companies.

One of the most practical papers was a lengthy discussion of the question of the "Sterilization and Preservation of Telephone and Telegraph Poles," by H. P. Folsom, of Circleville. Mr. Folsom considered this one of the greatest problems now confronting the management, and he believed one of the largest items of depreciation of outside construction to be caused by the rotting of the poles. His paper will appear in an early issue of THE AMERICAN TELEPHONE JOURNAL.

The formal part of the program closed with an address by Judge James A. Allread, of Greenville, on the subject "Power and Force of the Independent Telephone Association of Ohio." Judge Allread's address was not lengthy but it was full of meat. He gave a brief description of the rapid rise of the Association, its gradual resolution into a distinct form, its growth into a formidable financial institution, whose value and weight are due to co-operation.

At the close of the formal discussion of the program President Beam called for questions or informal discussion on any point suggested by any address on the program. President James B. Hoge of the International Independent Telephone Association took occasion to open a discussion on the question of the various Farmers' Mutual Telephone companies springing up in various parts of the State and the extent to which they should be countenanced and recognized by the Independent companies. President Hoge desired some sort of an expression of the ideas of the Association to carry to the International convention.

Mr. Hoge said that in some instances these mutual companies were cutting in on Independent territory and becoming competitors of the Independents in a detrimental way. He suggested that many of these companies bought equipment from the same construction companies patronized by the Independent companies with whom they come in competition. Mr. Hoge thought the trouble could be remedied through the supply dealers, who, he understood, would be more than glad to co-operate with the companies in their endeavor to abate the evil.

Washington Hyde of Darke county took issue with the idea. He said the Farmers' Mutual companies have as much right to build, operate and construct telephone plants as anybody in the country. He eloquently appealed to the convention to give fair play to these men who were only now on the ground occupied in the beginning by the Independents. He said they were up in his part of the country thick, and that one company was building a toll line from Warren.

"Let us not antagonize them," said Mr. Hyde. "Let us line up with them. We give free exchange service to one of these companies and the other day the company wanted to sell its plant to us. The problem will work itself out in time. Another rural company, and a joint stock company, too, with over 100 telephones, made a contract with us for $4 per telephone for our service. Soon they will prefer to turn over their plant to us, and in fact offered to sell out to us. 'We are farmers,' they said, 'and you are business men. We do not want to run this business.'

"Let them run the business. It educates them. When we go into new territory we have to educate the people to the use of telephones. Now, why not allow them to educate themselves? Encourage them to do so and it will pay. They will consider us their friends. The Bell people tried to get the same people I have mentioned to do business with them. If we hadn't got them the Bell people would. I would urge this convention to take no such step as contemplated."

Mr. A. W. Richardson of Salem, Columbiana county, gave a vigorous address along the same line. He said the convention should be cautious about how it antagonizes these people. "We want their trade," said he. "They go into the business as we did. Shall we antagonize them as the Bell did us? It's a means of educating the farmers to the benefits of the telephone. Be careful. It may be the beginning of our end."

Colonel W. D. Rush of Greenville stated that he had been misunderstood as to his remarks on the subject, it not being his intention to antagonize Farmers' Mutual companies who open up new territory. His idea was to prevent these companies from reaching out into territory already developed, as had been done in his section of the State, and seeking to run out Independent telephones to install the Mutuals. This would in no case antagonize the friends of the Independent movement, and as for the Mutuals who wage war on the Independents, they are as much the enemies of the Independents as the monopoly companies and should be treated as such.

The discussion was then closed and the report of the nominating committee was called for and made by the chairman.

Officers were then elected as follows: President, Frank L. Beam of Mt. Vernon and Columbus (re-elected); secretary, O. O. Welsheimer, Columbus; treasurer, Ralph Reamer, Columbus.

Delegates at large to the International Independent Telephone Association convention in Chicago next June: Frank L. Beam, Columbus; Dwight E. Sapp, Mt. Vernon; James B. Hoge, Cleveland; James S. Brailey, Jr., Toledo; W. Gilbert Thompson, Hamilton; H. P. Folsom, Circleville; I. H. Thiedieck, Sidney; G. P. Thorpe, Wilmington; J. B. Rhodes, Zanesville; C. Y. McVey, Cleveland; Louis Brucker, Mansfield; Cyrus Huling, Columbus; Frank A. Davis, Columbus; Washington Hyde, Warren; D. M Odaffer, Marion; R. E. Hamblin, Toledo; Charles Hollender, Newark; George M. Adams, Millersburg.

The alternates at large were also selected as follows: L. H. Beatty, Ravenna; H. L. Clark, Ada; W. W. Morrison, Toledo; C. L. Norton, Cleveland; Leo. Fiehr, Piqua; Dr. C. Jones, Athens; A. J. Curren, Elyria; A. V. Hageman, Lorain; William Hoyle, Cambridge; L. George, Wapakoneta; Clarence Brown, Toledo; C. H. Granel, Painesville; C. R. Newberry, Ashtabula; J. K. Johnston, Sandusky; D. A. Yoder, Bowling Green; D. E. Fuller, Clyde; E. E. Knox, Portsmouth; C. H. Marvin, Urbana.

The district delegates were named as follows: District No. 1, F. A. Knapp, Bellevue; E. L. Coen, Vermillion; District No. 2, W. F. Laubach, Akron; J. F. Smith, Cadiz; District No. 3, A. H.

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Doudna, Bridgeport; A. B. Hobson, Flushing; District No. 4, H. A. Marting, Ironton; G. A. Schleyer, Circleville; District No. 5, William B. Fee, Milford; Charles E. Biehn, Georgetown; District No. 6, John H. Ainsworth, Dayton; W. W. Fisher, Bellefontaine; District No. 7, George H. Metheany, Lima; J. A. Longwell, Van Wert; District No. 8, E. L. Barber, Wauseon; J. A. Steinkamp, Elmore; District No. 9, G. R. Johnston, Columbus, A. A. Whitney, Mt. Gilead.

Mr. Beam was called out for a speech and he gave a short talk thanking the convention for the honor bestowed and bespeaking the same hearty co-operation and support accorded him by members and officers as in the past.

The committee on constitution then made a report, making but one recommendation. That was that the constitution be changed so as to permit of an earlier date for the convention, arranging it so the date would fall more nearly the middle of March. The present date was so near the end of a quarter that it prevented the attendance of bankers and loan and real estate men's associations because of quarterly settlements. The convention adopted the report and placed the convention date on the third Thursday in March instead of the last Thursday.

The convention then adjourned.

The annual banquet was one of the most enjoyable events of the Association's social career. Two hundred members and guests sat at table together and enjoyed an excellent and altogether satisfying menu and listened to as bright and interesting a program of wit, oratory and music as every delighted a body of men on an occasion of the kind. No sort of drink was served, as usual, except water and coffee, and ministers, bankers, farmers, newspaper men, lawyers, physicians, in fact, men from nearly every profession and walk in life, sat together to enjoy the occasion.

Mr. Dwight E. Sapp of Mt. Vernon presided as toastmaster and filled the station with credit.

Governor Harris responded to the toast "Ohio." Clarence Brown of Toledo responded to the toast "Telephone Situation from the Point of View of the Professional and Business Man" in a brilliant speech.

Rev. Dr. S. S. Palmer of the Presbyterian Church, a local minister noted for his aptness at speechmaking, captivated his hearers by his response to the toast on "Modern Miracles."

The "Changed Conditions in Telephone Securities" were shown by Henry A. Lanman, who related that when he with his confreres went to New York to try to float the Columbus Citizens' Company project they were told that the bankers and financiers were not taking on that kind of securities at that present time. Now millions and millions of securities are "digested" with amazing relish and the cry is for more.

"The Wireless Telephone" received treatment at the hands of Norman C. McLoud of Cleveland.

Hon. C. R. Krickenberger said "Hello" in a short response to the toast and Dr. Alfred Robinson answered to the toast "Pride," and showed up the pride of the Independents in their business.

Interspersed with these able and witty responses were solos and songs by the quartet and at 1 o'clock a. m. the quartet sang the final "Good Night."

Rural Party Line Ringing Codes*

ONE of the best things this discussion of ringing codes is bringing out is the objection entertained by many of the best telephone men to the overloading of lines with too great a number of instruments. Herbert L. Moor, general manager of the Vermont People's Telephone Company, Barton Landing, Vt., writes that twenty telephones are as many as his company cares to put on one line. "We use ring numbers from 2 to 6, 11 to 14, 21 to 24, 31 to 34 and 41 to 43. In the rings from 11 to 43 the first figure denotes the number of long rings, the second the number of short rings—as 31, three long, one short. Ring numbers are separated from line numbers by a dash when printed in the directory."

A code requiring memorization by the operator, but designed to give a minimum number of rings for each call is contributed by C. E. McCormick, general manager the People's Telephone Company, Shepherdsville, Ky. He writes: "As in many others the line number is separated from the ringing number by a dash. As worked out we believe this code has the advantages of simplicity and brevity, and it may be easily learned. All that the operator has to memorize is that 1 means one long ring, 2 means two short rings, 3 one short and one long, and 4 one long followed by one short. A complete code for a 19 party line, No. 14, works out as shown in table 1.

14-1 —	14-12 — · ·	14-24 · · — ·	14-41 — · —
14-2 · ·	14-14 — — ·	14-31 · — —	14-42 — · · ·
14-3 · —	14-21 · · —	14-32 · — · ·	14-43 — · · —
14-4 — ·	14-22 · · · ·	14-33 · — · —	14-44 — · — ·
14-11 — —	14-23 · · · —	14-34 · — — ·	

Table 1.

"It will be noticed that ring 13 has been omitted, because it is the same as 41."

Ernest A. English, Hartland, Vt., mentions several systems. Concerning the use of the code using "Morse" telegraph letters he says: "Such a code is not satisfactory because there are too many letters which are hard to distinguish from each other. Another method is to let figures 1-5 represent short rings and 6-9 long rings, 6 standing for one long ring, 7 for two long rings, etc. Codes may be made up in any desired way from combinations of these figures. His experience indicates that a better method than either of these consists in letting the figures represent the number of rings and their position the length of rings. Thus a figure in the unit position may represent short rings,

1 — ·	6 · · · · · ·	14 — · · · · ·	19 — · —
2 · ·	7 · · · · · · ·	15 · —	20 — — ·
3 · · ·	11 — · ·	16 · · —	21 — — · ·
4 · · · ·	12 — · · ·	17 · · · —	22 — — · · ·
5 · · · · ·	13 — · · · ·	18 · · · · —	30 — — — ·

Table 2.

those in the tens position long, hundreds short and thousands long. For example, 2131 would mean two short, one long, three short, one long. It is to be noted that he puts short rings first, a practice to which many other correspondents raise objections. When a call begins with a long ring he inserts a cipher (0) in the units place. The use of only two numerals will give a code sufficient for the number of instruments on most lines by the use of different figures 2-5, 11-14, 21-24, 31-34, then hundreds and tens with a cipher in the units place, pronounced as the letter *o* in passing the call. These numbers are used as there should in no case be used a combination having more than five short and four long rings together. He states, however, that "It has been well proven to me that it is not satisfactory to use more telephones on a line than can be listed without going beyond the units and tens."

B. D. Hursh, superintendent and manager of the Stroudsburg and Bushkill Telephone Company, Stroudsburg, Pa., sends the code shown in table 2, ring numbers only being shown.

He states that one ring is made the exchange ring, and consequently 1 in the code represents a long and a short ring.

*Continued from previous issues.

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For other figures up to 10 a corresponding number of short rings is used, although he has never assigned any number above 7. Above 20 are three numbers designed "for a pinch," which afterward became standard. Concerning selective party lines he frankly says: "Letters were used instead of ringing button colors, as it is essential to distinguish them from code lines and we were not 'up to' the color scheme."

A code of the type whch requires memorization, using a unique set of figures, is used by W. S. Gates, Ida, Mich. It is shown in table 3:

Central —	23 — · ·	30 · ·	16 · — — —
40 — —	25 — · · ·	50 · · ·	32 · · —
60 — — —	41 — — ·	70 · · · ·	34 · · — —
80 — — — —	43 — — · ·	12 · —	52 · · · —
21 — ·	61 — — — ·	14 · — —	

Table 3.

The plan behind this code is as follows:

Numbers terminating in 0 have all rings of the same length; odd numbers indicate short rings; even numbers indicate long rings. The number of rings is determined by the position of the number in a sequence of odd or even numbers respectively,, as 2, one long; 4, two long; 6, three long; 1, one short; 3 two short; 5, three short. When this is understood no further memorization is necessary, an operator knowing instantly that 34 means two short and two long rings.

INDEPENDENT TELEPHONY IN TEXAS.

D. A. WALKER, who is president and general manager of the Independent telephone companies at San Antonio, Austin, Taylor, Temple, Belton and Tyler, Tex., in a recent letter to THE AMERICAN TELEPHONE JOURNAL, throws an interesting light on conditions in the State where he has such large interests. He writes, in part:

"In this State the Bell Company had a monopoly of the telephone business for years, and not until 1900 was there any concerted move towards competition on the part of the Independent telephone companies. During the year 1901 a large amount of capital from the Northern States was invested in Independent telephone plants throughout Texas. Wherever the Independents secured a franchise the Bell Company would immediately reduce its rates, which were at that time considered to be nothing less than extortionate, and attempt to improve its service, but would always maintain their high rate and poor service in places where they had no competition. As a result of this policy there are now nearly four hundred Independent companies operating in the State, furnishing service in every important city, with but one exception.

"Several bills are now before the Texas Legislature providing for the regulation of the telephone business throughout the State. One of these bills provides that no telephone company shall grant any frank or give any free service to any person or corporation not directly connected with the telephone company, and this is a just measure which should become a law. The Bell Company is very generous in a way, and, for reasons best known to itself, issues franks over its long-distance lines and furnishes free telephone service to any person or corporation which it thinks can or will lend it any assistance in stifling the Independent movement or in destroying the Independent companies with which it competes.

"The State of Texas requires all telephone companies to pay into the State treasury one and one-half per cent. of its gross receipts. Under this law there was paid to the State by the telephone companies during the quarter ending December 31 the sum of $17,703, which shows a gross business for the quarter of $1,200,000, or a gross business for the year of nearly $5,000,000. The importance of the interests which pay this large revenue is attracting the attention of the Governor and members of the Legislature, all of whom seem to be earnest in their efforts to break the monopoly that the Bell company has held on the people and to give the Independent telephone companies an equal chance to carry on their business. We are hopeful that before the Legislature adjourns that such laws will be enacted that the Bell Company will be compelled to give good service at reasonable prices, and meet the Independent people on an honest basis, and be forced to conduct an open, honest and fair competition."

Telephone Legislation in 1907*

NEW JERSEY.

SENATE BILL No. 57, introduced by Mr. Minturn, January 28, 1907, and referred to Committee on Municipal Corporations, is an act to empower cities to construct subways or conduits for the use of all telephone, telegraph and trolley wires and to order that such wires shall be placed in these conduits under such terms as may reasonably be established.

SENATE BILL No. 10, introduced by Mr. Ackerman, January 14, 1907, and referred to Committee on Municipal Corporations, provides that it shall be unlawful for any telephone company to erect poles or string wires in any public roads without first obtaining from the proper authorities permission, and also obtaining written consent from all the owners; this act to apply both to new lines and the extension of existing lines.

SENATE BILL No. 106, introduced by Mr. Cornish, March 4, 1907, and referred to Committee on Railroads and Canals, is a bill limiting the hours of a telephone operator on work connected with the moving of trains to not over eight hours in any twenty-four consecutive hours.

NEW YORK.

ASSEMBLY BILL No. 1144, introduced by Mr. Cuvillier, February 28, 1907, and referred to Committee on Electricity, Gas and Water Supply, provides that it shall be unlawful for any telephone company to charge for cities having a population of ten thousand or more inhabitants a rate greater than $2.00 per month for business or residence telephone service. A similar limiting provision is applied to systems operating outside of such cities, and toll rates are limited during the day to a rate of one-quarter of one cent per mile, with one-half that rate for night messages.

ASSEMBLY BILL NO. 1,538, introduced by Mr. Cuvillier, March 14, 1907, and referred to Committee on Judiciary, is a bill to make telephone companies common carriers under the supervision of the railroad commissioners, who shall have power to inquire into complaints, discriminations and all cases of neglect or violation of the laws governing common carriers. The power of the commissioners extends to the regulation of rates, and it is provided that it shall be their duty to require all telephone companies to make connections in each town with the systems of all other persons or companies carrying on a telephone business in the same town.

ASSEMBLY BILL No. 973, introduced by Mr. Cuvillier, February 27, 1907, and referred to Committee on Railroads, provides that telephone operators having to do work connected with the control of trains shall not remain on duty for more than eight in any twenty-four consecutive hours.

HOUSE BILL No. 605, introduced by Mr. Nevins, February 6, 1907, and referred to the Committee on Affairs of Villages, is an act to amend the village law in relation to telephone poles and wires in the streets and public places, and relating to the granting of franchises, which is prohibited until the question shall have been submitted to the qualified electors of the village at an annual election, or at a special election duly called and held for the purpose.

ASSEMBLY BILL No. 1,406, introduced by Mr. Lewis, March 25, 1907, and referred to Committee on Electricity, Gas and Water Supply, is an Act to amend the transportation corporations laws to compel any telephone company to install within thirty days of the receipt of a request a telephone in any building within five hundred feet of its poles or conduits. One section of the amendment provides that a request for the installation of the instrument shall be accompanied by a sum of money equivalent to the minimum charge for the use of the instrument for a period of one year.

NORTH DAKOTA.

SENATE BILL No. 300, introduced by Mr. Talcott, provides that after the passage of the act no person or corporation shall be permitted to conduct a telephone business until the proper license has been obtained as prescribed in the act. The license as originally obtained shall be subject to annual renewal after January 1, 1909. Application for license is in the form of a contract, which provides for the charging of like fees for like service to all persons, prohibits rebates, provides for physical connection with other systems operating in the same towns, and an interchange of service on a fair basis. District courts are to be given jurisdiction of suits necessary because of the operation of this law.

HOUSE BILL No. 284, introduced by Committee on Taxation and Tax Laws, provides that telephone companies shall make and file with the State

*Continued from the issue of April 6.

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Auditor between the first and thirtieth days of June a statement containing the name of the company, its nature, whether a person, association or corporation, location of its principal office, name and post-office address of the president, secretary, auditor, treasurer, superintendent and general manager, the chief officer or managing agent in North Dakota; the number of shares of capital stock, the par and market values, a detailed statement of real estate, with its value, and an inventory of personal property; also the entire gross receipts of the company for the preceding year for each office and the total, with the operating and other expenses of the company, the balance of profit or loss, statistics giving the entire length of lines in the entire State, and in each county, and such other information as the State Auditor may require. The object of these requirements is to enable the State Board of Equalization to ascertain the value of the property liable to taxation.

Other provisions of the bill relate to the apportionment of the taxes and assessments on the valuation which is thus determined.

SENATE BILL No. 23, introduced by Mr. Young, is designed to make it unlawful for any telephone company to give or offer franking privileges.

HOUSE BILL No. 232, introduced by Mr. W. E. Martin, makes it a misdemeanor to wilfully take down, remove, injure or obstruct telephone lines or wires.

OREGON.

SENATE BILL No. 162, introduced by Senator Malarkey, January 30, 1907, is an act to amend Section 4750 of Bellinger & Cotton's Annotated Codes and Statutes of Oregon, and relates to the method of fixing the amount of damages in cases where claims are entered by owners of land over which a telephone line passes, and describes the powers of the telephone company under the right of eminent domain, which is conferred by this act.

HOUSE BILL No. 90, introduced by Mr. Campbell, January 21, 1907, declares a telephone company to be a public service corporation, and contains general measures relating to the duties of such a corporation, including those in relation to service, proper apportionment of profits, determinations of capital, etc. Discrimination in the rendering of service or failure to render sufficient service upon reasonable payment are prohibited, and render the company liable to a damage suit.

HOUSE BILL No. 168, introduced by Mr. Moore, January 22, 1907, relates to a method of determining damages to property over which a telephone line passes; also contains provisions concerning the rights of eminent domain as conferred upon telephone companies.

PENNSYLVANIA.

HOUSE BILL No. 372, introduced by Mr. McCullagh, January 28, 1907, and referred to Committee on Municipal Corporations, January 28, 1907, is an act to empower municipal corporations and boroughs to regulate telephone companies and to prescribe their charges.

HOUSE BILL No. 272, introduced by Mr. Osborne, March 7, 1907, and referred to Committee on Municipal Corporations, is an act empowering cities, boroughs and townships of the first class to impose license fees for the erection of any pole upon the highway, and for the maintenance of the pole after its erection. The amount of such fees is prescribed as $1 for the erection of the pole and $1 per annum for its maintenance.

HOUSE BILL No. 275, introduced by Mr. Rex, February 26, 1907, is a bill to repeal the act approved April 17, 1905, and providing for the determination by the Court of Common Pleas of the proper county of all disputes as to the reasonableness of license fees between municipal corporations and telephone companies.

SOUTH DAKOTA.

SENATE BILL No. 111, introduced by Mr. Byrne, is an Act providing for the assessment and taxation of property belonging to telephone, railway, telegraph, express and sleeping car companies. It prescribes the reports which must be made, covering a statement of the property, earnings, dividends, etc., of the company in detail, and outlines the method of assessing based upon such a statement.

WASHINGTON.

HOUSE BILL No. 200, introduced by Mr. Huxtable, January 29, 1907, and referred to Committee on Judiciary, is an act covering the manner of carrying wires across railroad tracks. The Board of County Commissioners in each county is given the power to regulate the stringing of wires at such places, and the minimum height above the tracks permitted is set at 25 feet.

HOUSE BILL No. 346, introduced by Mr. Romaine, February 13, 1907, and referred to Committee on Judiciary, contains two sections, one of which grants the power to cities to regulate the operations of telephone systems; and the second one gives the city the right to regulate tolls and charges of telephone systems.

WEST VIRGINIA.

SENATE BILL No. 192, introduced by Mr. Bailey, February 11, 1907, and referred to Committee on Judiciary, is a bill to amend and re-enact Section 2 of Chapter 42, and to repeal Section 482 of Chapter 54 of the Code of 1899. This act relates to the right of eminent domain, and prescribes that telephone companies must obtain the consent of the county court of the counties through which their lines may pass before making extensions, and also covers the course which must be pursued before building in cities, towns or villages.

HOUSE BILL No. 33, introduced by Mr. McCrum, January 14, 1907, and referred to Committee on Railroads, limits the hours for any telephone operator employed by a railroad in connection with the handling of trains to eight hours in any twenty-four consecutive hours.

SENATE BILL No. 71, introduced by Mr. Silver, January 18, 1907, and referred to Committee on Roads and Navigation, is an act to amend the act approved on the 17th of March, 1891, authorizing telephone companies under certain conditions to erect poles along the county roads. In its amended form the bill provides that telephone companies may erect their poles and wires along any county road with the consent of the county court of the county through which such lines pass, provided that such lines shall not interfere with the public use of the road, or with the fruit and shade trees on private property, and provides further that the consent of the council of cities, towns or villages shall be obtained before such lines are erected.

SENATE BILL No. 6, introduced by Mr. Foreman, January 14, 1907, and referred to Committee on Railroads, is a bill limiting the hours of a telephone operator on work connected with the moving of trains on a railroad to not over eight hours in any twenty-four consecutive hours.

WISCONSIN.

ASSEMBLY BILL No. 293, introduced by Mr. Harrass, February 5, 1907, and referred to Committee on Transportation, is a bill to grant power to the common council of any city of the first class to regulate rates for telephone service.

ASSEMBLY BILL No. 445, introduced by Mr. Harrass, February 8, 1907, relates to the granting by municipal corporations of full power of eminent domain over the property of telephone or public service corporations when such property may impair or inconvenience the use of streets, bridges, etc.

ASSEMBLY BILL No. 298, introduced by Mr. Palmer, February 5, 1907, and referred to Committee on Transportation, is a bill to amend Section 1778, Statutes of 1898. This bill in its amended form relates to the duties of telephone companies in connection with the building and maintaining of their lines along public highways, and provides that no corporation shall have any rights under the act in any city or village until it has obtained a franchise from the city or village as provided by law.

SENATE BILL No. 294, introduced by Senator Morris, February 8, 1907, and referred to Committee on Transportation, relates to conditions under which wires may be strung across railroads.

ASSEMBLY BILL No. 502, introduced by Mr. Coolidge, February 12, 1907, is a bill providing that any telephone company shall, on receipt of a demand from another company doing business in the same city or village, make direct connection for the transmission of messages between the two exchanges. The conditions under which exchange may be effected are described in the bill.

SENATE BILL No. 136, introduced by Senator Rummel, February 6, 1907, and referred to Committee on Transportation, provides that the town council of any city of the first, second, third or fourth class shall have power to establish and regulate rates for telephone service.

(To be continued.)

MORE FIGHTING AGAINST COMPETITION IN TENNESSEE.

THE peace and quiet expected after the enactment of the new telephone law in Tennessee has failed to come and instead there is still some confusion. The legislature passed a law declaring telephone companies public service corporations and declaring that as such they had the right to use the streets of any town or city on the highways of the State without the consent of the local authorities. This opened the way for the Home Telephone Company to get into Nashville, where it had been carrying on a desperate fight with the Cumberland company for two years. Soon after the passage of this bill, however, W. B. Marr and J. B. Jones, taxpayers of Nashville, the former a member of the lower house in the legislature, filed a plea for injunction restraining the Secretary of State from granting a charter to the Home Telephone Company, charging that the new law was unconstitutional. The case was heard by Chancellor Allison at Nashville, that authority declaring the law constitutional and denying the fiat requested. Instead of stopping here the case was immediately carried by the Bell interests to the Supreme Court of the State and is now pending before that court. The Independent interests are only awaiting the favorable decision of this final tribunal for the Home company to begin at once to construct a modern plant and put in a big system in Nashville.

Following the decision of Judge Allison the Secretary of State granted a charter to the Home Telephone Company, which names the capital at $1,000,000. W. C. Polk, R. G. Cooper, H. M. Perry, Geo. S. Parks, Luke Lea and Perkins Baxter are the incorporators.

Pending all this annoyance at Nashville the Home Telegraph Company, the same as the Home Telephone Company, has been pressing the work on its trunk line across Tenessee and within a few days will have a line complete and in operation from Louisville to Birmingham, Ala.

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THE EDITOR'S PAGE

WATCHING THE MUTUAL SYSTEMS.

OCCASIONAL misunderstandings, it is to be observed with regret, occur in some sections of the country between the operators of Independent exchanges and those who organize associations which secure to their members a limited telephone service on the mutual principle. There is frequently some doubt as to the attitude which the larger Independent company should take toward the smaller Independent concern which occupies a nook in its territory. Mutual companies are organized for a great variety of reasons, but the principal one in almost every case is the desire to secure, as indicated a moment ago, the benefits of a very low rate on a limited service. Very likely the originators of such movements are in some instances disgruntled subscribers of the Independent company in whose territory they seek to operate, and which they hope to oppose. In such instances the mutual company may, in a small sense, become a competitor with the company with which the interests of its members in reality demand cordial relations. Those who organize mutual companies at the present day should before spending any money for telephone wire and instruments look into some of the broader features of the new business in which they are determined to engage.

It may be safely assumed that the farmers who try to build their own telephone lines are above the average in intelligence and business ability, and pretty well accustomed to dealing with their fellow men, or they would not want to use the telephone at all. When these men are considering means for getting in their harvests more quickly, and more cheaply, by the purchase of modern machinery, they look the matter over pretty carefully before making a decision. A keen buyer will not only talk with his immediate neighbors, but will very likely look around through a whole county to get the experience of other men. When he finally does give his order he is sure that the machine he buys will be useful to him for some years to come. It is just this kind of business sagacity that he needs to apply to his telephone purchases. There is no more need for him to make a jump in the dark in one matter than in the other.

After consulting men who are familiar with the early history of the Independent companies and their development he will find that he will start, if he really does start, in much the same way that all the pioneer companies began to operate. They put in a few telephones to give a neighborhood service. A, B and C wanted to talk to one another, and to nobody else, and they put in telephones on the same line. Then C had some dealings with D, who as a matter of accommodation to C, was taken on to the line, and gradually, one by one, others were added, until the service grew beyond anything which had ever been expected, and a company had to be organized. It is this wonderful tendency of the telephone service to expand, to grow constantly beyond its existing boundaries, that the farmer does not appreciate. Because when without the telephone he always trades at the nearby store he does not realize that he may be able to take advantage of a broader and perhaps cheaper line of goods at the county seat by being able to stand in his own home and talk with the merchants located there.

This is what the men in charge of the town and city Independent companies will do well to bring home to their friends who have the mutual idea. Teach them the telephone business. If they want to build competitive lines in territory already developed let them do it. Their education will progress very rapidly. Their ideas will expand. Like all the other Independent subscribers theirs will continually be demanding a more far-reaching service, and a better service. Their education will cost them money, in such an event, but when they finally are ready to join the regular organized Independents they will be loyal supporters, they will have had an experience in many respects like that of the pioneers, many of whom are now the mainstay of the Independent movement. While they are getting this experience the larger Independent company can be spending its money on its town plant and trunk lines, bringing its plant up to the highest point of efficiency, getting ready for toll business which will bring it, dollar for dollar, larger and quicker returns than the strictly local investment.

When a mutual plan is proposed for the building up of a territory not yet developed by the Independents the education of those who are pushing the movement should not be left wholly to the hard school of experience. It will pay to assist them. Just as soon as the town manager learns that a mutual plant is to be built in his territory he can assume that if he handles his end of the proposition correctly the mutual system will eventually become a feeder to his own, and in such a manner as will be to the advantage of all parties concerned. It is of little use to try to bring about this relation immediately. Probably at the very start neither party really wants it. The thing to do is, without creating any jealousy, or awakening any suspicion of intended injury to the financial interests of the smaller concern, to give such advice as will insure the laying out and building of lines, and use of instruments which after a period of two, three or five years may be properly used in connection with the town exchange and the Independent toll lines. After this, nature can safely be allowed to take its own course—a sharp lookout being maintained, none the less, for Bell sub-licensing agents.

Now there is another thing that is important along this line. Not long ago an article in this Journal described the efforts being made by one of our brightest telephone managers to encourage the use of the large number of rural telephones connected to his exchange for business purposes. He had the territory well developed, and it was his object to show the farmer that it was to his interest to use the telephone as an aid to business, in fact, as a money making instrument, and that the way to do this was, in the main, to use it for conversation with business men in the city. At the moment we have not full knowledge of the situation in his territory, but we are willing to lay ourselves open to contradiction by venturing the opinion that in those parts of his territory where he has accomplished his object there is not today in existence a single Independent mutual company, unless it be one with which his exchange has thoroughly satisfactory contract relations.

SMALL COMPANIES AND THE TOLL LINES.

AT Independent telephone conventions during the present year the consideration of methods of handling toll business and of preparations for this class of work is receiving more attention than ever before. The owners of even the very smallest plants realize that they will soon be able to talk with practically any point within a radius of a thousand miles. The success of the toll business will depend on the full cooperation of the local companies. Consequently the small concerns are doing everything possible to put their lines, instruments and switchboards in the very best condition, which is absolutely essential if they are to be used in handling long haul connections.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

PURCHASING TELEPHONE INSTRUMENTS.

Would I be violating the laws of Tennessee to buy new telephones, or second-handed, and then sell them to others in our company? If so, would I be allowed to order them for others? C. B.

WE know of no law in Tennessee, or of any other State, or of the United States, that would be violated by your buying new or second-hand telephone instruments and selling them to any one you please. Telephone instruments are property like stovewood, potatoes or mules, and can be bought and sold with equal freedom. The patented quality of the instruments makes no difference with the right to deal in them. There would be no legal obstacle to your ordering them for others.

INJURY FROM SAGGING WIRES.

SOME boys about 14 years of age went upon an unenclosed and unimproved tract of rough land covered with trees, brush and weeds, to get some zinc which had been thrown away, in order to sell it for junk. One of the boys came in contact with a wire of an electric company where it had been allowed to sag, and where the insulation had been worn off apparently by contact with a tree, and was instantly killed by the shock. The court held that although the boy was a trespasser on the land, the company was liable because it had known of the dangerous condition of the wire, and that persons were in the habit of going upon the land. Connell vs. Keokuk Electric Ry. & Power Co., 109 N. W., 177.

RESPONSIBILITY OF TELEPHONE OR ELECTRIC LIGHT COMPANY IN ABSENCE OF INSULATION.

I desire to submit for your decision the question as to responsibility of the telephone company or the electric light company in the following case:

The electric light company in our city had a pair of wires carrying 1,100 volts strung from a pole on one side of the street, which had a transformer carrying a pair of wires into a house on the same side of the street, but the wires carried across the street were landed on a house on the opposite side, leading to a transformer before they entered the house. The wires that went from this pole to the house in which the transformer was located carried 1,100 volts. The insulation was very poor on the wires making this circuit—in fact, the wires were bare in a number of places. The telephone company, in the exercise of its right to string wires in the city, was compelled to cross the wires of the light company. Its employees, following the usual custom, threw a rope across the electric light wires, and were pulling the same over the wires in the customary manner when the two wires of the light company, by reason of the pulling of the telephone line over, came together, and, being bare, of course a short circuit was formed and one of the wires burned off. Dropping to the ground, it fell upon a horse standing near the pole, and the horse fell to the ground, and before the wire could be cut, which was done as soon as possible by the telephone company's men, the horse was so severely shocked that he died.

The point in the controversy is whether or not the telephone company is liable because of the action of its employees. We contend not, because we were exercising our rights and following the usual methods of stringing the wire, and the light people had not maintained their wires in good condition, or the accident would not have occurred. It might have occurred even without our employees bringing the wires together, as the wires were very slack and the heavy wind-storm might have blown the wires together and thereby form a short circuit and burn off.

I should be glad to have your valuable opinion upon this statement of facts as to the liability. J. W. B.

IN the above case two points are not mentioned which might be decisive of the question. These are whether the telephone company had permission of the electric company to string the wires in the manner that was followed, and whether the telephone company's employees knew or should have known that the insulation on the wires was poor. If the telephone company had the express or implied permission of the electric light company for its work, we believe the electric light company would be responsible. If, on the other hand, the telephone company, through its employees, knew or should have known that the electric wires were poorly insulated and bare in some places, we think the telephone company would be responsible. In any case, as to the owner of the horse, both companies would probably be jointly liable for its death. In the absence of proper insulation the duty rests upon both the company whose lines are already established and that which is subsequently building to avoid all danger. The telephone company could have compelled the electric light company to properly insulate the wires before it built over them. In the absence of such proper insulation, if it knew, or should have known the situation, it was its duty not to string its wires. We also think that the employees of the telephone company had no right, unless authorized by the electric company, to pull the rope across the electric lines in such a way that the wires came together, even though such was the customary method of doing the work. A case that may be of some assistance on this question is McKay vs. Southern Bell Telephone Company, 111 Ala., 337; 19 S., 695; 31 L. R. A., 589.

ARE PAY STATIONS A NECESSARY PART OF TELEPHONE EQUIPMENT?

THE Cumberland Telegraph & Telephone Company has commenced suit against the City of Louisville, Kentucky, for an injunction to prevent the city from collecting a license tax of one hundred dollars for each of one hundred and sixty-seven pay stations operated by the company, the tax having been fixed by a general ordinance of the council approved November 22. The validity of the ordinance is attacked on the ground that the city had no right to levy a direct tax in addition to the ad valorem tax and franchise tax, and it is further contended that the city is without authority under any circumstances to impose such a tax. A permanent injunction is sought. The company contends that the pay stations are a necessary part of the equipment which they were given authority to install under an act of the legislature incorporating the Cumberland Telephone & Telegraph Company. The ordinances of the city under which the telephone company operates stipulates that it shall have the power to install all appliances and equipment necessary for the conduct of a telephone system.

WHEN A NICKEL-IN-THE-SLOT ATTACHMENT IS PROPER.

AT Des Moines, Iowa, the district court has decided a case involving the question of whether telephone companies can insist on slot machine telephones in business houses. The case was brought by F. S. Aldrich, a pharmacist. The court holds that where a telephone is had for public service, a nickel-in-the-slot attachment is proper, but where it is to be used only for the manager and his employees, a simple telephone may be demanded.

In his opinion the court said: "The court finds that the contract between the plaintiff and the defendant, properly construed, entitles the plaintiff to make a reasonable use of the defendant's instruments and connecting wires in the transaction of his business. This he may do in person or through his employees. The word employees should receive a liberal but reasonable interpretation; so interpreted, it does not mean that such instruments and wires are subject to the free use of the general public."

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QUERIES

DETERMINING RESISTANCE OF VOLTMETER BY ITS OWN READINGS.—(843.)

In measuring resistance with a voltmeter, I have had given me a formula in which the resistance of the voltmeter is taken into consideration. As the voltmeter in my possession is not marked to show the resistance of its windings I would be grateful if you will inform me of some method whereby I might ascertain its resistance. P. H.

To secure the resistance of your voltmeter without the use of any other testing instrument, all that is necessary is to take a reading with the voltmeter on some power source with a constant voltage and introduce known resistances in series with the voltmeter until the needle shows exactly one-half of the first reading. The sum of the known resistances will equal the resistance of the voltmeter.

REPAIRING CONDENSERS.—(844.)

We have recently had a number of our 2 M. F. condensers punctured by lightning. Will you kindly inform us if there is some way in which we can repair these condensers without returning them to the manufacturer. We have unrolled a few but experience difficulty in again getting them into their cans. Anything you may be able to tell us will be greatly appreciated. A. S., Kansas.

There is not much doubt but that you experienced difficulty in getting the condensers again in the cans after having been unrolled, when one considers that in their manufacture they are placed under a pressure of from fifteen to thirty tons after rolling and boiling in paraffin. Further, you would discover if you were to test that your condensers were of a greatly different capacity after the unrolling. The method frequently employed to repair a punctured condenser is to send a current of high voltage through it for a very short time. Touch the terminals of a 110 volt circuit to the condenser terminals for about a second and unless the "short" in the condenser be unusually heavy the trouble will disappear. This is due to the fact that the tinfoil extending through the puncture is usually not much larger than a pin point and the heavy current applied momentarily will burn it away, owing to its high resistance. Another way in which condensers are sometimes repaired is to heat the entire condenser gradually until it is just about as hot as you can handle it. This often causes the paraffin to run and fill up the puncture. Caution must be used, however, in the heating, as the paraffin will, if it becomes too hot, explode.

CHANGING SWITCHBOARD FOR SELECTIVE RINGING.—(845.)

We have a Stromberg-Carlson C. E. common return system, which we wish to change to two party selective ringing. We are using a Warner pole changer, and hand generators for ringing.

Will you please give diagram of ringing apparatus whereby we can ring two party selective without sending in all the ringers of the telephones we now have to have them changed. C. L., Iowa.

We presume that the switchboard you have is the one using the circuit substantially shown in diagram *B*, Fig. 845. To change the board for selective ringing you will only have to install a master ringing key, wired as shown in diagram *A*, Fig. 845. In the line circuit you will have to insert a 100 ohm impedance coil as shown at *I* in the diagram. As all lines on a board of this type are connected in common to one bus bar it is necessary to add this coil in each line in order to eliminate a dead ground on the line. After the impedance coils are wired in it will be possible to ring a bell connected to ground. With this circuit, as modified, an additional 100 ohms will be connected in series with the supervisory lamp in the cord circuit when a connection is up, and the lamp will not burn quite as brightly as before. Still, it will be bright enough for good supervision.

WIRES RUN IN IRON PIPE.—(846.)

Our wires on one lead go through an iron pipe under the railroad tracks and we have trouble with them on account of the moisture getting in the pipe and grounding the lines. How can this be avoided permanently?

It would be well to pour into the pipe, after the wires are in, as much melted paraffin as it will hold and then tape the ends well with a layer of rubber tape, and over that a layer of regular friction tape.

The melted paraffin will fill up all of the open spaces in the pipe and obviate the possibility of a condensation of moisture in the air in the pipe causing water to affect the insulation, making a partial ground.

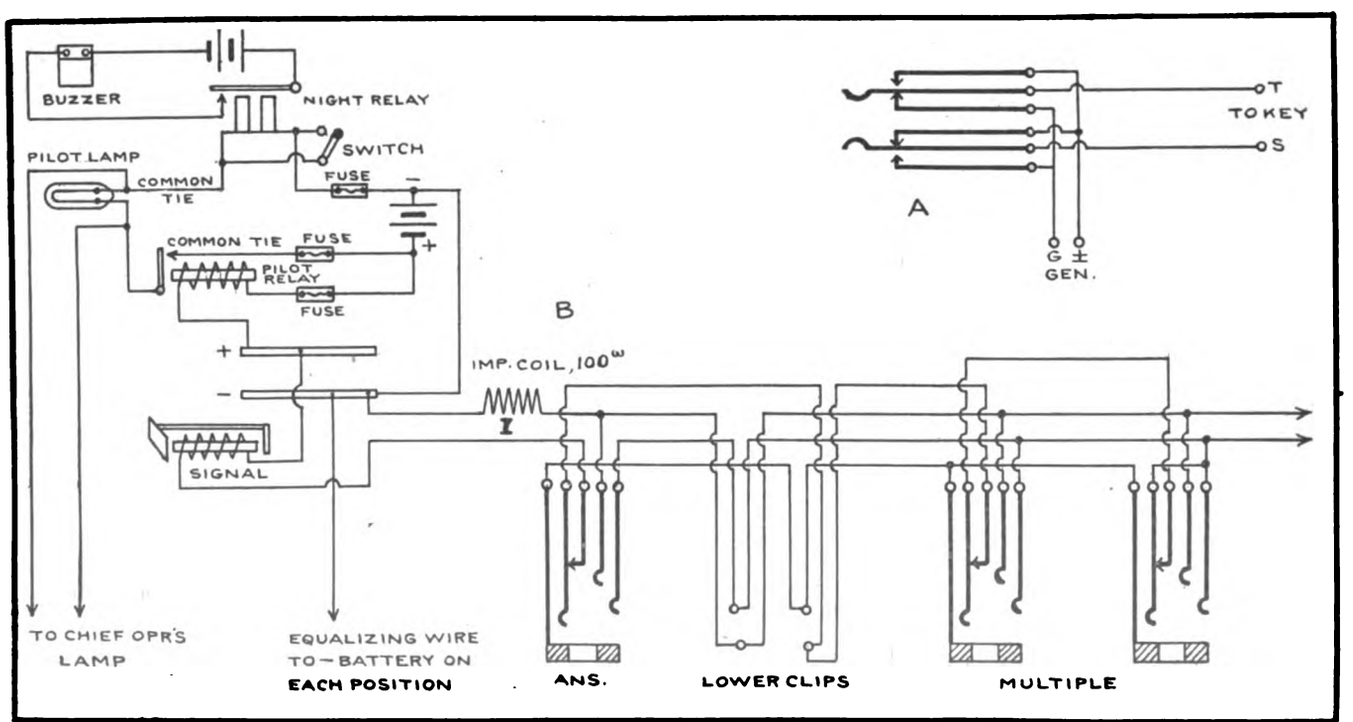

Fig. 845.

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THE DEADLY PARALLEL

AUTOMATICS VS. LEVERS

With GRAY PAY STATIONS you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

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HARTFORD, CONN.

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For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

FOR SALE, cheap, 10,000 feet single duct Camp conduit. Make us an offer. Address, Schenectady Home Telephone Co., Schenectady, N. Y. 812

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

CABLE SPLICER wants position. Experienced. Best references. Address, Box 796, care American Telephone Journal, 100 William Street, New York. 796

WANTED—Experienced telephone solicitors. Zenith Telephone Company, Duluth, Minn. 798

WANTED—Young man, a hustler, to take charge of assembling room in telephone factory. Must be thoroughly familiar with private line and inter-communicating circuits. Also two good assemblers. Address, Box 807, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 807

WANTED—Thoroughly capable cable splicer, with technical training and 12 years experience, wants position as cable foreman, superintendent of construction, or splicer, in the west or southwest, where there are good prospects of advancement, good pay, and good work is appreciated 810

WANTED---Continued

POSITION wanted by draughtsman as checker, designer, etc., of wire chief's desk, monitor's desk, etc., and telephone switchboard. Capable of taking charge of department. At present employed by leading telephone company. Speaks English, German, French and Spanish. Address Box 808, care American Telephone Journal, 100 William street, New York. 808

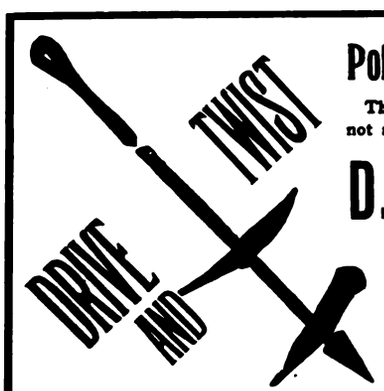
WANTED—Competent cable splicer. Position permanent. Send references. Address, Zenith Telephone Co., Duluth, Minn. 809

POSITION wanted by married man as troubleman, line instrument switchboard, central energy or magneto systems. Capable of managing exchange and construction. Open for engagement. Address, Telephone Man, 697 Lake St., old No., Cleveland, O. 811

SITUATION wanted by first-class man as manager of exchange or territory, 5 years experience with Bell, and can show results. Advise particulars and salary. Address, Box 813, care American Telephone Journal, 100 William St., New York. 813

HIGH CLASS maintenance and switchboard installation man would consider proposals for change. Northwest preferred. Any equipment put in first-class condition. Past record of seven years open to closest investigation. Technical education. Salary $1,500. Address Box 804, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 804

WANTED—Position as manager of contract department by a man with a thorough knowledge. A1 references. Open April 1. Address Box 803, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 803



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D. & T. Anchors

can be driven anywhere any time of the year. They pull against solid earth and hold as well as a dead man.

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Form G-90.	For Small or Branch Exchange use; carries account for 2 years.
Form G-90-A.	For Large and Medium City Exchanges and Systems of Exchanges; the most complete form made.
Form G-90-B.	For City Exchanges having many Rural Lines.
Form G-90-C.	For City Exchanges, Rentals and Toll Charges separated.
Form G-90-E.	For Small Exchanges, Rentals only.
Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
Form G-90-H.	One subscriber to a sheet; carries account 12 years.
Form G-90-I.	For Small Exchanges; Bound Books; carry 12 subscribers on a page for 1 year.

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TELEPHONE SYSTEMATIZING DEPT.

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IN THE OPERATING FIELD

BELL COMPANY RAISES RATES IN CHATTANOOGA, TENN.

THE East Tennessee Telephone Company, a subsidiary branch of the Cumberland Telephone Company, has created a row in Chattanooga by announcing that rates will be increased in that city on May 1. The commercial interests and the city council have protested against the advance, but the order to increase the rates is still in effect.

PROPOSED NEW JERSEY LEGISLATION CONTRARY TO THE INTERESTS OF TELEPHONE COMPANIES AND THE PUBLIC.

NEW JERSEY is at the present time very much aroused over the questions of telephone rates and operating conditions. The Hon. Wm. J. Wood, of Elizabeth, is seeking information which will enable him to improve existing conditions, and the following correspondence between him and Mr. Henry Shafer, of Chicago, contains matter of general interest.

Henry Shafer, Esq.,
Prest. International Tel. Mfg. Co.,
Chicago, Ill.

Dear Sir:

"I have read with interest your letters to Sir Wm. Mulock as they appear as exhibits in 'Appendix A' to report of Canadian Select Committee on Telephone Systems.

"I am having introduced into the State Legislature here a bill establishing maximum rates for New Jersey. These rates run from $50 per year throughout the State for unlimited service on a single party wire to twenty dollars ($20) per annum for the same service on a four party wire. In your opinion are these rates too low?

"I wish that I could obtain a more complete list of telephonic rates and charges than that which appears on the 20th page of the volume just referred to, so that I could prepare my argument and be in readiness to meet all assaults made on the bill. The Telephone Trust has a monopoly in this territory and their general conduct is dictatorial, domineering, arbitrary and insulting, while their charges would reasonably justify an indictment for extortion.

"If there is anything that you can offer to assist me, it will be gratefully received. What I most desire is statistical information showing that my rates are not confiscatory; if you can give this, or suggest any way in which it may be obtained, it will prove of inestimable value. I might add as a guide to any suggestions as to rates that we have no city in this state of over 300,000 population."

Thanking you for your courtesy, I am, respectfully yours,

(Signed) W. J. Wood.

To this letter Mr. Shafer made the following reply:

Hon. Wm. J. Wood,
208 Broad street,
Elizabeth, N. J.

Dear Sir:

"Replying to your valued favor of the 6th inst., in which you state that you are having introduced in the New Jersey Legislature a bill establishing maximum rates for telephone service, you will pardon us for suggesting that we believe legislation in a different form would secure the best possible telephone service at the most reasonable charges to subscribers much more readily than by absolutely fixing the rate.

"If the State fixes a rate at which service is to be given it should insure the investor in the exchange a maximum charge at which labor can be secured during the life of the franchise and a maximum price of material going into the construction and maintenance of an exchange.

"It must be realized, when considering matters of this kind, that at the present prices of copper, brass, German silver, platinum, everything going into the construction of a telephone plant costs approximately twice as much as it did a number of years ago. Even the interest rate on capital, at the present time, is higher.

"Practically all supply houses for all classes of material at this time have a notation on their invoices that the prices are 'subject to change without notice,' and all changes for the past year or more have been an advance over previous quotations, and from present indications there is no tendency toward a reduction in prices of such material.

"We believe that the most satisfactory method of obtaining the results you desire is by open competition and to direct State legislation toward making competition in your State more open. That is, when a company is organized with a charter from your State, to operate telephone exchanges, and is desirous of making the investment and installing a telephone system, depending on the public for securing their patronage against an existing company that has the advantage of already having a large list of subscribers—that the new company should be allowed to build its system in any city in your State, and the local municipal authorities, when adverse, having no more power than police jurisdiction.

"You will agree with us that real competition in any line gives to the consumer or user the very highest class of product which money and skill can devise at the least possible cost under existing conditions.

"This principle has been demonstrated in the telephone line in many of our larger cities as well as the small towns. In the larger cities, where two companies are operating under competition, it has not only greatly increased the number of telephone users, but has caused the large business houses who feel obliged to reach all of their customers to have a line to both exchanges, and have so increased their telephone patronage by reason of competition that if all of the telephone users were connected with one system, such business houses would require the same number of trunk lines to the one exchange to meet their requirements.

"Taking into consideration the increased number of telephone subscribers, having two systems does not increase the number of instruments necessary to the large business houses and in this manner work a hardship, but, on the contrary, it has a tendency to reduce the rental to the lowest rate possible and increase the efficiency of the service to the highest standard obtainable.

"For the reasons above mentioned, you will pardon us for stating we believe that the legislation you have in contemplation will check the development of the business, have a tendency to prevent competition under existing uncertain conditions with reference to the future cost of material and labor, and also have a tendency to make, if possible, the present telephone trust even more dictatorial, domineering, arbitrary and insulting—and we believe you can only obtain the desired results by passing legislation so that if the right to establish a public service exchange cannot be secured of the local municipalities this right may be obtained from the courts or by reason of the company's State charter."

Yours very truly,

(Signed) Henry Shafer.

VIRGINIA INDEPENDENT TELEPHONE ASSOCIATION TO MEET AT NORFOLK, VA., ON MAY 21, 1907.

THAT the next annual meeting of the Independent telephone men of Virginia shall be held at Norfolk, on May 21, 1907, was determined at the recent meeting of the executive committee of the Virginia State Independent Telephone Association. The members of the executive committee, who are Albert Parlett, Bristol; W. N. McAnge, Suffolk; W. R. Duke, Charles Hesville, C. Fred Bonney, Norfolk, and George B. Keezel, Keezeltown, met at Murphy's Hotel, Richmond, on March 19, and, in addition to fixing the date of the State convention, admitted into the association four new members. As the date fixed for the State meeting is after the opening of the Exposition, the time is especially convenient for many members from the more remote parts of the State. Matters of considerable importance and interest will come up at this meeting, and it is expected that there will be a very full attendance. Any question will be cheerfully answered by B. L. Fisher, secretary of the association, Rocky Mount, Va.

LOUISVILLE BOARD OF TRADE TO SETTLE BELL RATE CONTROVERSY.

A COMMITTEE of five members of the Board of Trade at Louisville, Ky., is to decide what constitutes fair rates for telephone service given by the Cumberland Company in that city, and will name the rates to be charged. J. E. Caldwell, of Nashville, president of the Cumberland Telephone & Telegraph Company, went to Louisville last week to meet with the Board of Trade to discuss the subject. Louisville patrons of the Cumberland company have been complaining loudly of the unjust rates and poor service given there, and requested Mr. Caldwell to come up and talk the matter over. He was asked if he would submit the company's books to the committee to enable them to decide what a just rate would be, and he consented. The following committee now has the matter in hand and will name the rates for Louisville: George Gaulhert, Attilla Cox, W. R. Belknap, Marion Taylor and Logan C. Murray.

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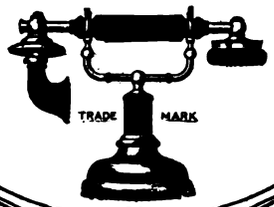

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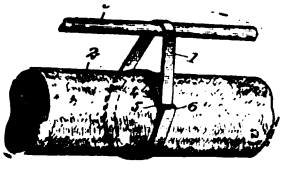
TELEPHONE PATENTS

CABLE HANGER.

Benjamin H. Skinner, Canton, Ohio, patents (No. 844,200, dated February 12, 1907; filed September 11, 1906; serial No. 334,185) a cable hanger.

This device consists of a band of metal 1 of sufficient length to encircle the cable 2 and to again also encircle the cable and the supporting wire 3 when cable and wire are spaced at the desired distance apart. It is attached in the following manner:



One end 4 of the band is placed on one side of the cable and from this point the band extends up over the cable and around through the ring 5, which is secured to end 4, thence up over the supporting wire and down around the cable to the ring where the end 6 of the band is secured by passing through the ring and folded back under the portion of the band adjacent to the ring.

PARTY-LINE LOCK-OUT.

Charles H. Wood, Cleveland, Ohio, patents (No. 840,544, dated January 8, 1907; filed February 17, 1904; serial No. 193,962) and assigns one-fourth to John T. Hobbs, Cleveland, Ohio, a party-line telephone mechanism.

This patent covers a form of step-by-step selective lock-out system, in which the selector is operated by means of relays connected serially on a third line wire extending from the central office through the several stations to a terminal ground.

COMBINED TELEPHONE DESK STAND AND CALL BELL.

Charles A. L'Hommedieu, Buffalo, N. Y., patents (No. 849,250, dated April 2, 1907; filed January 5, 1905; serial No. 239,819) and assigns one-third to William A. L'Hommedieu, New York, N. Y., and one-third to Harry L'Hommedieu, Buffalo, N. Y., a combined telephone desk stand and call bell.

This patent covers a form of desk telephone having a hollow base provided with an opening through which extends the hammer of the ringer movement located in the base; the standard has a screw thread engagement with the base. Immediately above the base the standard is encircled by a gong upon the inner surface of which the hammer of the ringer movement strikes.

TELEPHONE CALL METER.

Charles T. Bradshaw, Philadelphia, Pa., patents (No. 847,461; dated March 19, 1907; filed September 27, 1904; serial No. 226,142) a telephone call meter.

This invention is a modification of the telephone call registering device or meter on which Mr. Bradshaw filed application October 3, 1903, serial No. 175,566, and comprises an attachment for the subscriber's telephone containing a relay actuated by current of a nature different from that required to operate the other portions of the telephone and which is controlled by the central office operator. The operation of this relay causes a movement of cog wheels to which are attached the indicating pointers traveling over a marked dial.

There is also provided means whereby this relay is locked against operation when the telephone receiver is upon its hook, thus insuring that no calls may be registered excepting when the subscriber is using the line.

NON-ARCING MUFFLED FUSE.

Frank B. Cook, Chicago, Ill., patents (No. 843,930; dated Feb. 12, 1907; filed June 12, 1905; serial No. 264,937) a non-arcing muffled fuse.

This patent covers a suitable tube with fuse enclosed therein surrounded by a fluffy asbestos filling to prevent flash and take up the report occasioned by the explosion of the fuse wire.

PARTY-LINE LOCK-OUT SYSTEM.

Clarence A. Anderson, Salina, Kansas, patents (No. 846,381; dated March 5, 1907; filed January 3, 1905; serial No. 239,344) and assigns one-half to John Anderson, Salina, Kansas, a telephone exchange system.

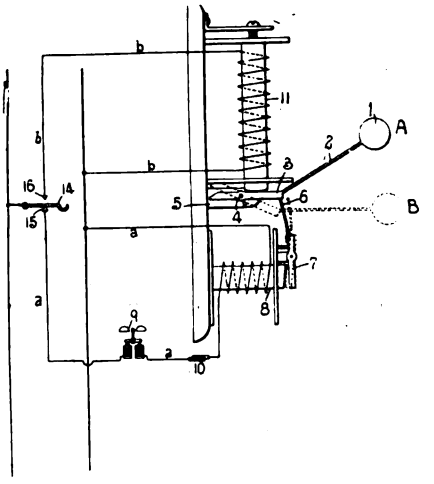
This patent covers a form of step-by-step selective party line lock-out system adapted to magneto call lines, in which are employed a device at the central exchange for selecting the subscriber desired, and a selector in the telephone so arranged as to respond to the impulses of current sent out by the central office selector.

TELEPHONE SIGNAL INDICATOR.

Thomas B. Jordan, Dallas, Texas, patents (No. 838,117; dated Dec. 11, 1906; filed June 15, 1906; serial No. 321,879) and assigns two-thirds to George A. Carden, Dallas, Texas, a telephone signal.

This device consists of a signal operative upon the ringing of a subscriber's station, indicating to the subscriber, when two or more telephones are located in close proximity, the instrument upon which he has been called.

The signal is held in an unoperative position by the retaining spring 6, which being attached to the armature of the coil 8 and being operative with it, will of necessity release when the coil 8 is energized, which would be the case in the event of the ringing current passing through it. The circuit of coil 11 is completed upon the removal of the receiver from the hook and the magnet



being energized by the flow of talking current thru the coil attracts the armature plate to which the signal is attached back to its normal position, upon which the retaining spring 6 falls in place, leaving the indicator ready for the next call.

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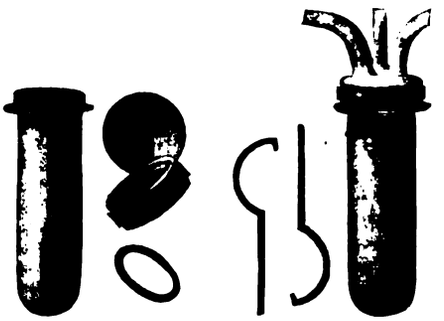

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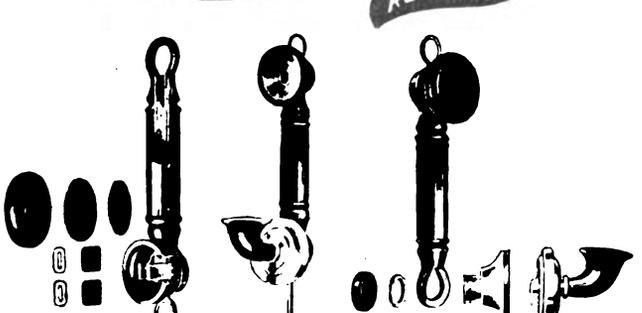

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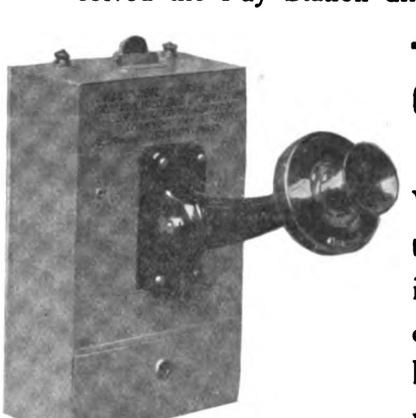

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IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

NEW DECISIONS ON TELEPHONE PROTECTOR PATENTS.

FRANK B. COOK, 238 West Lake St., Chicago, Ill., announces that a decision has been awarded in his favor in two of the interference suits on self-soldering protectors which have been pending for a long time. The cases came up for final hearing at Washington, D. C., February 18, 1907, and on March 4th Mr. Cook received the decisions.

There were only two claims at issue in each case, and the four claims which are now awarded to Frank B. Cook read as follows:

In an electrical circuit protector, a heat cartridge provided with a central spindle having a solder connection with the cartridge, means for heating and softening said solder connection on the passage of an unduly strong current, and means for placing said spindle in position for resoldering.

In an electrical circuit protector, a heat cartridge provided with a centrally disposed movable member having a solder connection with the cartridge, means for softening said solder on the passage of an unduly strong current to permit movement of said member, and means apart from the heat coil for placing said member in position in which the solder connection can be hardened, fastening the central member.

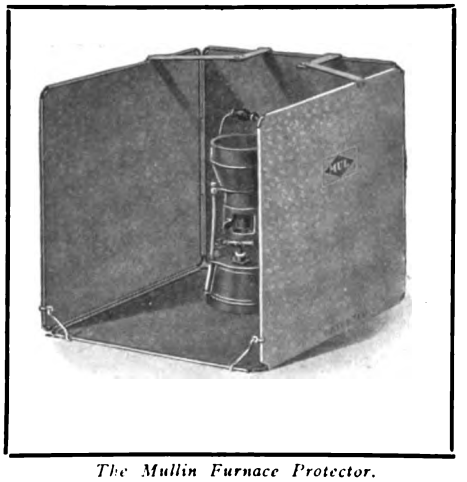
In an electrical circuit protector the combination of an excess current operated device, circuit controlling mechanism co-operating therewith, and means apart from said device for placing the parts thereof in position for another operation.

In an electrical circuit protector, the combination of a self-soldering heat cartridge, means for supporting the same, and means apart from said cartridge for placing the parts thereof in position for resoldering.

These claims, which are only four out of 32, indicate how broad will be the scope of Cook's patents. The above claims, together with others, were especially drawn to cover the Kaisling device, and this fact was stated by Mr. Cook in a circular which he published and sent out April 15th, 1905. The decision which has just been rendered at Washington is absolutely final, so that Cook's self-soldering patents are thoroughly established.

THE MULLIN FURNACE PROTECTOR.

CABLE splicers when using a gasolene furnace set near the mouth of a manhole are accustomed to set up a shield to prevent the wind from beating down the flame and carrying away the heat, in order to get most rapid and efficient effects. An improperly designed shield is, however, more of a nuisance than a benefit. Frequently, it may be observed that on street corners and other places where the wind is strong the workmen will place a heavy weight against the shield, but even this does not always prevent it from toppling over when a passer-by accidentally comes into contact with it. If it does upset, the hot paraffin or solder will be spilled, and if they happen to fall in the manhole, the results are sure to be unpleasant and probably serious. Colman J. Mullin, 438 Kent Ave., Brooklyn, N. Y., has frequently observed these things and has designed a furnace protector which he claims will do away with all such difficulties. As shown in the accompanying illustration, it is provided with straps and hooks which will absolutely prevent the wind or the passer by from accidentally toppling it over. It shields the furnace perfectly from the wind.



The Mullin Furnace Protector.

Mr. Mullin manufactures also a great variety of special devices for underground cable construction, designed by him after a long and thorough practical experience in underground cable work. They have met with the approval of engineers and foremen and are now in use by many of the most important telephone companies. Among his devices may be mentioned Wizard winches, both in steel and wooden frames, mandrel conduit cleaners, sheaves to prevent creasing of lead cable in pulling in, rigid uprights to hold the sheaves in position in the wellhole, the well known "Gem" cable grip and many other devices. Circulars describing all of his specialties will be mailed to any person interested in underground work upon receipt of a request.

THE CENTRAL TELEPHONE & ELECTRIC CO., St. Louis, Mo., have on hand for immediate shipment a considerable quantity of standard size telephone cable, on which they will be pleased to make quotation for spring construction work. The company is able to make especially attractive terms on this cable, which was purchased before the advance in the prices of raw material. There are many other items on which they are in a position to make special quotations, and it will be to the advantage of the telephone buyer this spring to communicate with them promptly. Particular attention is invited by the company to its new pay station sign.

STROMBERG-CARLSON TELEPHONE MFG. COMPANY, Rochester, N. Y., sells rosin core flux solder, put up on 10 lb. spools, in a form which is very convenient for the use of every telephone exchange and shop. A small amount can be taken off the spool and packed away in a lineman's kit. This form of solder has probably a wider use in telephone work than any other, as it does away with the annoyance and disadvantages arising from the use of paste about a switchboard and frames. Full information and prices may be obtained by writing to the company.

THE LEEDS & NORTHRUP CO., 4901 Stenton avenue, Philadelphia, Pa., is sending out an interesting bulletin which calls attention to some of the most important points embodied in its standard resistance sets and Wheatstone Bridges. Upon the first page of this bulletin appears a certificate from the National Bureau of Standards covering the tests made for the verification of a Wheatstone Bridge of the Anthony pattern which was made by the company. The tests show the precision of adjustment obtained by the company, as shown by the fact that there was no resistance in the rheostat having an error of adjustment as great as 1/100 of 1 per cent of its value. This proportion is much higher than that specified in the catalogue and the company states that this improvement over the guaranteed value is commonly attained in its instruments. Statements in regard to the qualification of the instruments which give them permanent accuracy are also given and the various standard types of sets are described and illustrated.

The booklet is one that will prove interesting to every telephone man having to deal with the maintenance of telephone apparatus. It will be mailed free upon request.

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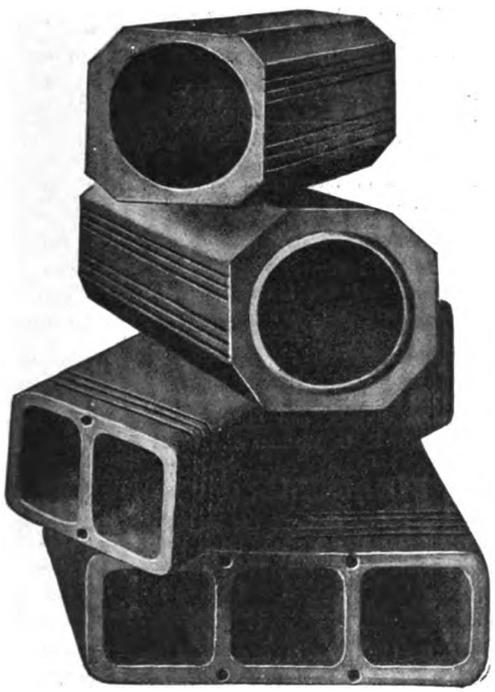
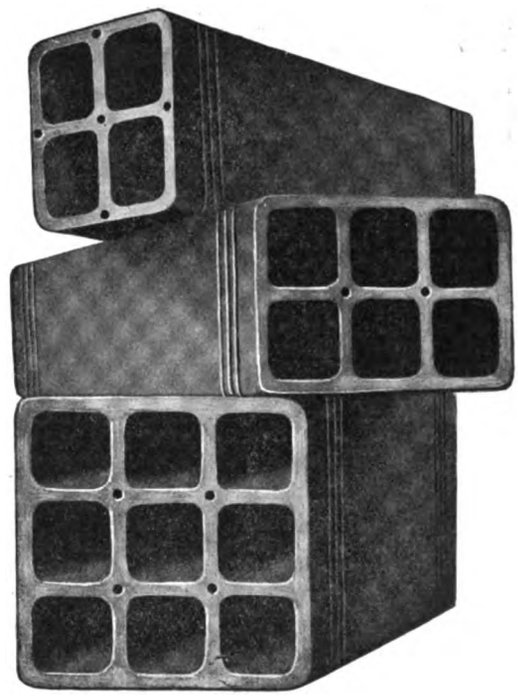


SINGLE DUCT
3¼ inch Round Bore
3½ " " "
4 " " "
3½ " Square "
3¼ " Round "
(Socket Joint)

MULTIPLE DUCT
2, 3, 4, 6 and 9 Duct
3¼ inch Square Bore
3½ " " "

MULTIPLE DUCT
2, 3, 4 or 6 Duct
3¼ inch Round Bore



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Bell Telephone Co., U. S. A.
Bell Telephone Co., Canada
Pennsylvania R. R. Tunnel, N. Y. City
Trolley Tunnels, N. Y. City
Rapid Transit Subway, N. Y. City

ANNUAL CAPACITY:

40,000,000 Duct Feet

WRITE FOR CATALOGUE

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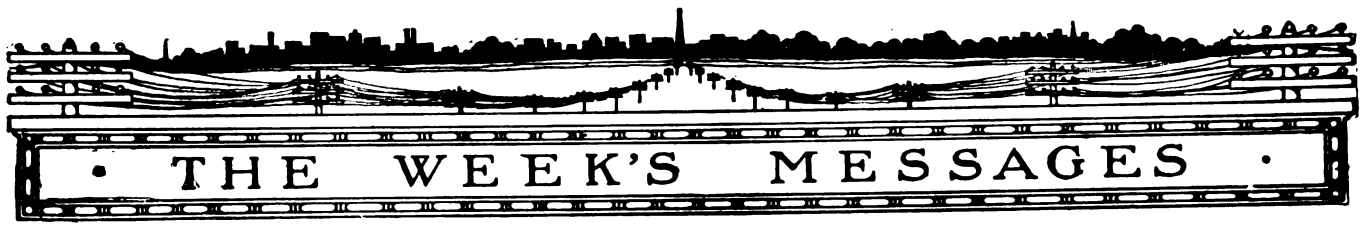

NEW COMPANIES.

CRAIG, COLO.—Articles of incorporation have been filed by the Craig Mutual Telephone Company. It has a capital stock of $10,000, and the incorporators are U. F. Harrison, J. J. Jones. J. C. Nervell, of Craig.

CHATHAM, ILL.—The Union Telephone Company, Chatham, has been incorporated with a capital stock of $35,000. The incorporators are Fred W. Kelly, F. A. Bowdle and C. B. Cheadle.

GRANTFORK, ILL.—Articles of incorporation have been filed by the Grantfork Mutual Telephone Company, whose intention it is to build a number of farmers' lines. The capital stock is placed at $2,400 and the duration of the corporation is fifty years. Among the stockholders are Julius Reinhart, John Schwarz, J. A. Gruenenfelder, August Determan and August Costa.

NASHVILLE, ILL.—The Washington County Mutual Telephone Company has been incorporated with a capital stock of $2,400. Among the incorporators are Isaac Reidelberger, John S. Carson and M. L. Merker.

SUMMERFIELD, ILL.—The North Grove Telephone Association, with a capital stock of $2,500, has been incorporated by George Leutender, Samuel Baer and John Hirnstein.

FRANKFORT, IND.—The Forest Telephone Company has been organized, and is soon to file articles of incorporation.

CLINTON, IA.—The farmers northeast of Clinton have organized the Farmers' Mutual Telephone Company, and have elected the following officers: H. T. Baird, president; L. L. Levsen, secretary; Theodore Jochimsen, treasurer. It is the intention of the company to form connections with the Low Moor Company.

SYRACUSE, KAS.—The Bear Creek Telephone Company, with a capital stock of $5,000, has been incorporated.

CONSTANCE, MINN.—The Eastern Telephone Company has filed articles of incorporation. It has an authorized capital stock of $50,000 and the members of the corporation are A. W. Johnson, John Simonson and Fred Johnson, of Constance.

HOLDEN, MO.—The Citizens' Mutual Telephone Company has been organized with a capital stock of $2,500. The incorporators are M. C. Bell, G. G. Batsell, Brad. Harmon, L. F. Murray and others.

HYANNIS, NEB.—The Hyannis Central Telephone Company has been incorporated and the village has granted it an exclusive franchise.

ANDES, N. Y.—The Gladstone Hollow Telephone Company has filed articles of incorporation. The directors of the company are Elliott Graham, Reed Dumont and H. W. Frisbee, of Andes.

LEW BEACH, N. Y.—An Independent telephone company, to be known as the Union Grove and Beaverkill Telephone Company has been formed at Lew Beach. The following officers have been elected: President and secretary, R. J. Hoag; vice-president, A. J. Ackerly; treasurer, A. J. Davidson; superintendent, W. R. Woolsey.

WALNUT, N. C.—A charter has been issued by the Secretary of State for the Walnut Telephone Company, of Walnut. The capital stock is given at $2,000 and the incorporators are A. D. McDevitt and others.

CUMBERLAND, O.—Articles of incorporation have been filed by the Cumberland Farmers' Telephone Company. It has an authorized capital stock of $5,000, and J. M. Hunter and others are among the incorporators.

PLEASANT CITY, O.—The Farmers' Telephone Company, of Pleasant City, O., has been incorporated by J. H. Larrick and others. It has a capital stock of $2,000.

WOODWARD, OKLA.—Articles of incorporation have been filed by the Indian Creek Telephone Company, of Woodward. It will commence business with a capital stock of $5,000 and the incorporators are A. W. Green, J. C. Steadman and others.

LANDIS STORE, PA.—The Mountain Telephone Company, whose intention it is to operate in Berks, Montgomery and Lehigh counties, has been incorporated with a capital stock of $5,000. Samuel B. Latshaw, of Barto, is president of the new company.

UNIONVILLE, PA.—The British Creek Valley Telephone Company, Unionville, with a capital stock of $5,000, has been incorporated.

ARMOUR, S. D. The Farmers' Union Telephone Company has been incorporated with a capital stock of $1,000. The incorporators are W. S. Clark, C. Q. Knapp, Andrew Bringelson, J. W. Hewitt and A. H. Ruck, all of Armour. It is the company's intention to build and operate lines in Charles Mix and Douglas counties.

NASHVILLE, TENN.—The Secretary of State has granted a charter to the Home Telephone Company of Nashville. The capital stock is $1,000,000, and the incorporators are W. C. Polk, R. G. Cooper, H. M. Perry, Geo. S. Parks, Luke Lea and Perkins Baxter.

ROUND ROCK, TEXAS.—A citizens telephone company, to be known as the Hailey Telephone Company, has been organized at Round Rock, and the following officers and directors have been elected: W. N. Halley, president; Henry Palm, secretary and treasurer; John Trusdale, Roy Tisdale and J. A. Doyle, directors.

MARSHES, W. VA.—Articles of incorporation have been filed by the Trap Hill Telephone Company, of Marshes, whose intention it is to build and maintain telephone lines in Raleigh and Fayette counties. It has a capital stock of $5,000, of which $700 has been subscribed. Among those interested in the enterprise are G. W. Calloway, J. H. Poteet, J. W. Taylor, G. W. Willis, W. J. Daniel, G. P. Daniel and J. Brown, all of Marshes.

COCHRANE, WIS.—The Diamond Telephone Company, of Buffalo (P. O. address Cochrane), has been incorporated with a capital stock of $500. Among the incorporators are Thomas Donahue, Stephen Lytle and Richard Mae.

GERMANIA, WIS.—Articles of incorporation have been filed by the Shields Telephone Company, of Germania. It has an authorized capital stock of $5,000, and the incorporators are C. E. Pierce, J. A. Schalow, G. W. Grahn and others.

PERDIA, WIS.—The Perdia Division of the Badger Mutual Telephone Company has been organized and the following officers elected: John Hughes, manager; John Lien, secretary; Gilbert Lee, treasurer. It is proposed to build a line from Webster to Grantsburg by way of Perdia.

BUFFALO, WYO.—The Klondike Telephone Company, whose object it is to construct, maintain and operate telephone lines in Johnson county, has been incorporated with a capital stock of $1,000. The principal office of the company is to be at Buffalo, and the following directors have been elected: J. Elmer Brock, R. O. Watkins and G. E. A. Moeller.

FINANCIAL.

NEW PARIS, IND.—The capital stock of the New Paris Mutual Telephone Company has been increased to $10,000. It is the company's intention to build some extensions and install some new equipment in its exchange.

MONROE, MICH.—The Ida Telephone Company has increased its capital stock from $5,000 to $10,000.

THREE RIVERS, MICH.—At a recent meeting of the Three Rivers Telephone Company it was voted to increase the capital stock from $50,000 to $100,000, in order that extensive improvements might be made in the company's plant.

MANKATO, MINN.—A four per cent semi-annual dividend on the common stock outstanding and a three per cent semi-annual dividend on the preferred stock, payable April 15, has been declared by the Mankato Citizens Telephone Company.

BURLINGTON, O.—The Burlington Telephone Company has increased its capital stock from $300 to $3,000.

M'KINNEY, TEXAS.—The capital stock of the McKinney Telephone Company has been increased from $30,000 to $40,000.

OCONOMOWOC, WIS.—The Badger Telephone Company has filed an amendment increasing its capital stock from $5,000 to $25,000.

FRANCHISES.

HOPE, IND.—At a regular meeting of the Hope town board an ordinance granting a franchise to the Hope Telegraph and Telephone Company was passed.

NEWS—WANTED

THE matter contained upon the message and Operating Field pages of this paper is contributed largely by our special correspondents. We believe, however, that there are many valuable items of telephonic interest which are never brought to the attention of the public. There is no reason why this condition should exist, and the Editor, therefore, invites all telephone companies and the officials of such companies, to furnish any information that they can consistently make public relative to financial statistics, new construction, elections, franchises and personal items.

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THE WEEK'S MESSAGES

ALDEN, IA.—A franchise to install a telephone system in Alden has been granted to George Stringer and W. E. Trousdale.

BATAVIA, IA.—The Batavia Telephone Company has applied for a twenty year franchise at this city.

UNDERWOOD, IA.—The Independent Telephone Company, of Council Bluffs, has been granted permission to install an exchange and telephone system at Underwood and work on the plant will be commenced at once.

WINSTON-SALEM, N. C.—A telephone franchise has been granted to Dr. W. P. Knight and his associates, of Winston-Salem, to construct a telephone line from Kernersville to Oak Ridge, N. C.

EAST TORONTO, ONT., CAN.—The Independent Telephone Company of Scarboro, of which Alf. Hoover is president, has been granted a franchise at East Toronto.

COMBINATIONS.

KNIGHTSTOWN, IND.—The Knightstown Independent Telephone Company has acquired the plant of E. L. Harrison at this city.

CALIFORNIA, PA.—The Union Telephone Company, of California, has acquired the plant of the Federal Telephone Company at Roscoe.

ELECTIONS.

EDDYVILLE, IA.—The Mutual Telephone Company has elected Ed. Chapman, president; D. H. Hawthorn, secretary-treasurer; Geo. Ward, B. W. Smith and Joe Kirfman, directors.

ALMA, MICH.—The following officers have been elected by the Union Telephone Company: Tod Kincaid, president, Owosso; J. P. Gibbs, vice president, Ithaca; L. L. Conn, secretary, Alma; treasurer, G. S. Ward, Alma.

SUMMIT CITY, MICH.—The Farmers' Mutual Telephone Company has elected the following officers: President, L. J. Tedman; vice-president, A. J. Higbea; treasurer, John Bowden; secretary, A. E. Pulver.

RAVERSE, MINN.—The following officers and directors have been elected by the Farmers' Co-operative Telephone Company: Andrew Young, president; F. Hahn, vice-president; Louis Yost, treasurer; Frank Osborne, secretary; Paul Guertin, Ed. McMasters and Geo. Wolfe, directors.

MAPLEWOOD, MO.—The Maplewood Telephone Company has elected the following officers: M. D. Norton, president; E. N. Norton, vice-president; J. S. Stephens, treasurer; G. B. Lamm, secretary.

HIGHLAND, N. Y.—At the annual meeting of the stockholders of the Highland Telephone Company Henry Greenfield was elected president; J. H. Hunter, vice-president; B. C. Durland, treasurer, and F. H. Florence, secretary.

LAKE VIEW, N. Y.—The following officers have been elected by the Lake View Telephone Company: President, F. E. Lord; vice-president, William Newstead; secretary, Frank Kane; treasurer, Fred King.

PERSONAL.

FRED CLEAVER has been appointed superintendent of the plant of the Bell telephone company at Dubuque, Ia.

W. B. MOORE has been appointed manager of the exchange of the Cumberland Tel. & Tel. Company at Alexandria, La.

ELDON MOWRER has accepted the position of wire chief at the exchange of the Sandusky Home Telephone Company, Sandusky, O.

NOAH YENRICK has recently resigned his position as manager of the Lancaster Telephone Company, at Lancaster, O., to take charge of the exchange of the Home Telephone Company at San Diego, Cal.

MISCELLANEOUS.

WANATAH, IND.—The Wanatah telephone exchange has been acquired by J. Vene Dorland, president of the LaPorte Telephone Company. Many improvements and extensions in the system are planned by the new owner.

WEST LIBERTY, IOWA.—The West Liberty Telephone Exchange has become the property of M. S. Mellick, he having purchased it from the West Liberty Telephone Company. The purchase price was $12,000.

MURRAY, KY.—The property and franchise of the Independent Telephone Company have been acquired by Dr. Will Mason, whose intention it is to make many improvements in the plant.

WASHINGTON, PA.—The directors of the Farmers' Mutual Telephone Company are J. C. C. Pease, R. L. Munce, R. G. Lutton, S. O. Black, R. B. Blaney, S. N. Hopper, H. A. Bay, W. Coursin, C. M. Linn, H. P. Mollinauer, J. R. McPherson, J. W. Martin, B. K. McConnell, H. H. Bebout and John Fulton.

New Construction in the Field

LEWISTOWN, ILL.—The telephone lines of L. E. Cutler at Abingdon are to be extended to Lewistown.

MONMOUTH, ILL.—New lines from Monmouth to Berwick and Swan Creek are being built by the Independent Telephone Company.

MT. PULASKI, ILL.—Many improvements are being made by the Mt. Pulaski Telephone Company in its system.

ANGOLA, IND.—The Steuben County Electric Telephone Company, which has recently installed a new switchboard, expects to build a new line from Angola to Metz. The line between Fremont and Jamestown is also to be rebuilt, and considerable work is to be done around Crooked Lake and Lake James.

ADAIR, IA.—It is the intention of the Farmers' Mutual Telephone Company to greatly enlarge and improve its exchange at Adair.

KEOSAUQUA, IA.—A new switchboard has been installed by the Farmers' Mutual Telephone Company, of Birmingham, at this place.

ALMA, MICH.—The Union Telephone Company contemplates making extensions and improvements in its plant this year.

CLAYTON, MICH.—New lines are being constructed by the Clayton Telephone Company.

MODDERSVILLE, MICH.—The Citizens' Telephone Company contemplates the erection of a new line from Moddersville to Leota.

HALLOCK, MINN.—It is the intention of the Kittson County Telephone Company to erect a new line west of Hallock.

MANKATO, MINN.—Among the improvements planned by the Mankato Citizens' Telephone Company is a line to Decoria.

MINNEAPOLIS, MINN.—New lines are to be built by Tri-State Telephone Company.

ARTESIA, N. M. Lines have been built by the Penasco Telephone Company to Clouderoft, which gives it connections with El Paso, Alamogordo and other points along the Rock Island road.

NAPOLEON, N. D.—The Napoleon Telephone Company expects to extend its system to Hazelton and Braddock.

GAYSPORT, O.—The lines of the Union Hill Telephone Company have been extended into Morgan county.

WAMSLEY, O.—A line from Wamsley to Mineral Springs is to be constructed by the Blue Creek Telephone Company.

HARRISBURG, PA.—The American Union Telephone Company is planning for the equipment of exchanges at Indiana, New Castle, Lancaster, Hagerstown, Chester and Ridgway. Plans for increasing its long distance and toll facilities have also been considered and approved.

YORK, PA.—The York Telephone Company is planning to construct a long distance line from Pittsburg to Philadelphia, and, to make the extension, it is expected that the company will reorganize and obtain a new charter under the name of the York Telephone & Telegraph Company.

FREDERICK, S. D.—A line from Columbia to Frederick is to be erected by the Groton-Ferney Telephone Company.

YANKTON, S. D.—Additional long distance lines are to be erected by the Yankton Independent Telephone Company.

TEMPLE, TEXAS.—The Independent Telephone Company is overhauling and rebuilding its lines at this city.

ABERDEEN, WASH.—The Independent Telephone Company, of which Edward Finch is president, is soon to commence work on its system at this city, a franchise having been granted some six months ago.

SUNNYSIDE, WASH.—Among the improvements in its system recently made by the Farmers' Independent Telephone Company was the installation of a new switchboard.

MEDICINE HAT, ALB., CAN.—The Alberta government has set aside $200,000 for telephone construction, and will make this city the center of the provincial long distance system. Address Hon. W. H. Cushing, minister of works, Calgary, Alb.

MISSION, B. C., CAN.—Many new lines are to be built by the Mission Rural Telephone Company.

MINIOTA, MAN., CAN.—This municipality has decided to at once construct a rural telephone system with 275 miles of pole line. Address J. L. Thompson, Buclah, Man.

MOOSEJAW, SASK., CAN.—Charles Thomas, manager of the Moosejaw Telephone Company, Moosejaw, Sask., announces that an extension is to be built to Craik.

UNDERGROUND.

CAPE MAY, N. J.—The Cape May council has granted the Eastern Tel. & Tel. Company permission to place its wires underground in Cape May.

BROCKPORT, N. Y.—The Home Telephone Company is placing its wires underground in Brockport.

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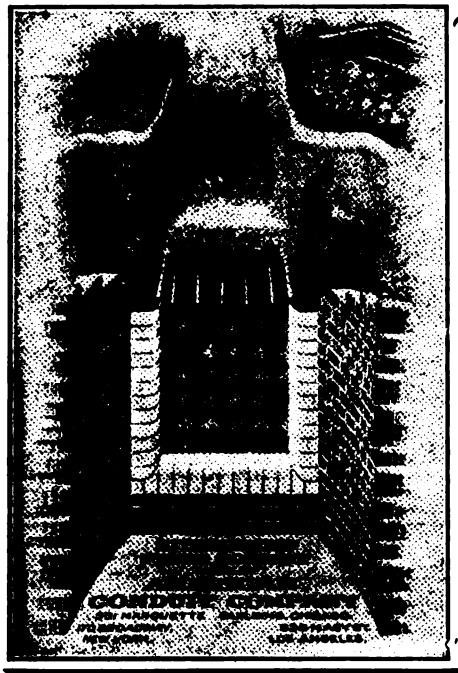

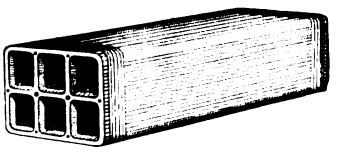

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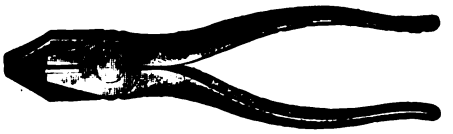

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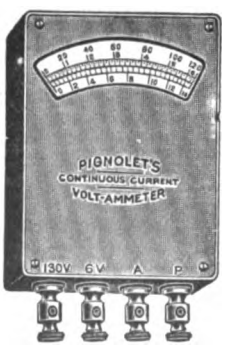

Suppose you have a line in trouble—grounded or open. You don't know the exact location, but you send out a troubleman to hunt it up and clear it. It may take him an hour or a day. Meanwhile the subscriber is getting hot under the collar and saying things about telephones in general and yours in particular.
If you have a Pignolet voltmeter or volt-ammeter you can determine the approximate location and also get an idea of the nature of the trouble. With the information your troubleman can find the fault in jig time, and you will have prevented the subscriber kicking by giving him service at the earliest possible moment.
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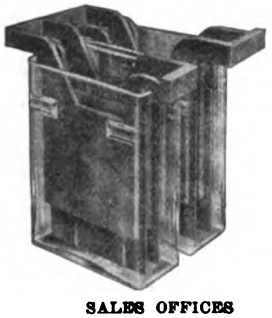

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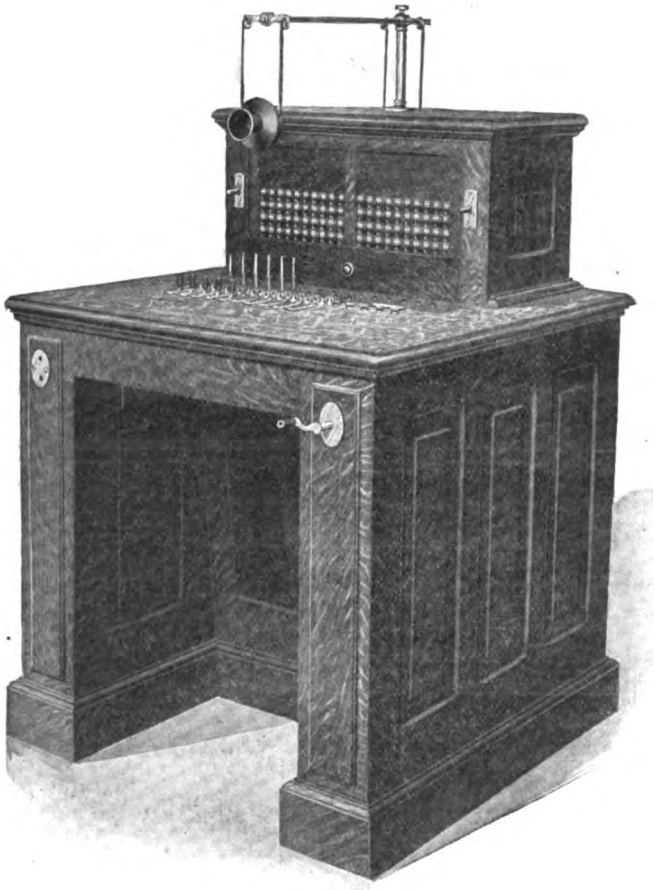

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Furnished in any size from the smallest to the largest, and to suit all requirements.

All wiring brought down to a connecting rack contained in the rear of the cabinet.

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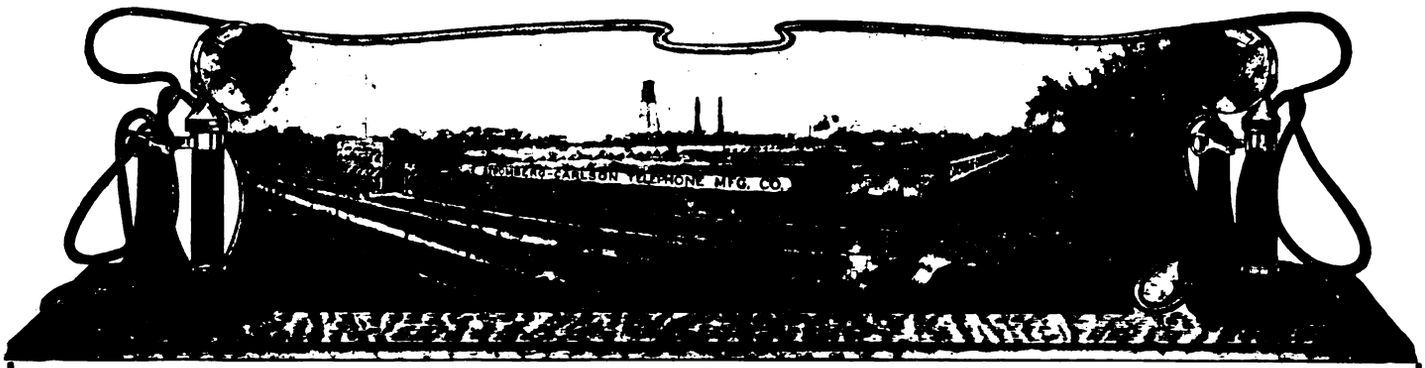
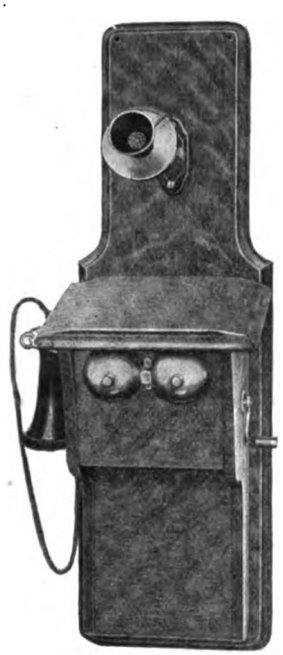


BRIDGING TELEPHONES

"CENTRAL ENERGY STYLE"



CLOSED VIEW.

The "Central Energy" Style Bridging telephone, as illustrated, is furnished with the same equipment as the Compact type Bridging telephone.

The construction of the cabinet is simple and compact, permitting all apparatus, except the ringer, to be mounted on the backboard.

The ringer wiring is soldered to the spring hinges, upon which the cabinet swings, permitting the ringer to be adjusted when cabinet is open.

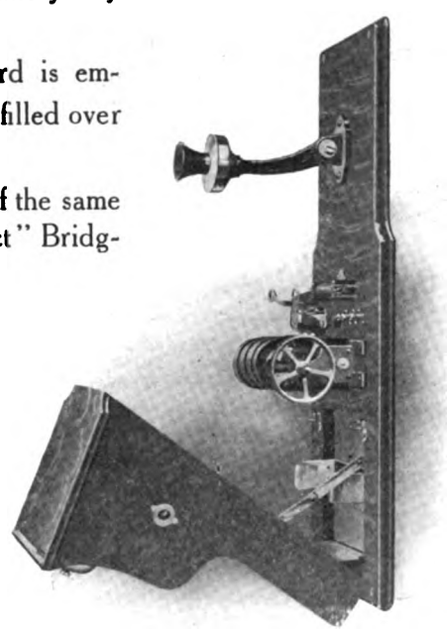
The generator is mounted on two metal strips, enabling immediate removal and rigid mounting.

The line bridging posts are enclosed.

The backboard is cut out to admit two cells of dry battery, which are supported by a galvanized sheet iron battery tray and a spring steel clip.

The wiring through the backboard is embedded below the surface in grooves and filled over with beeswax.

All trimmings and apparatus are of the same quality and forms as used in the "Compact" Bridging Telephones.



OPEN VIEW.

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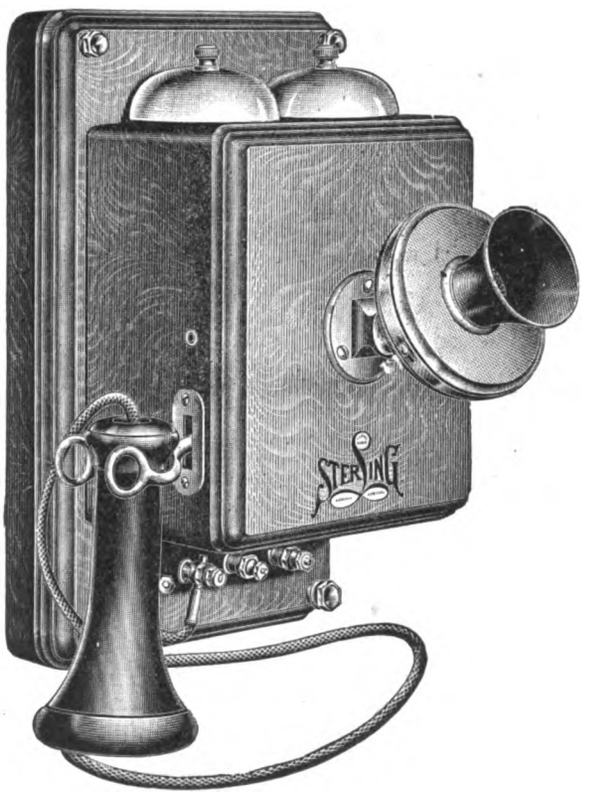
TO COLLECT RENTALS?

TO PLEASE SUBSCRIBERS?

TO PAY DIVIDENDS?

TO BUILD UP YOUR PLANT?



No. 20

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ARE YOU UP AGAINST IT? IF SO, PUT IN Sterling Phones

They will act like oil on a stormy sea

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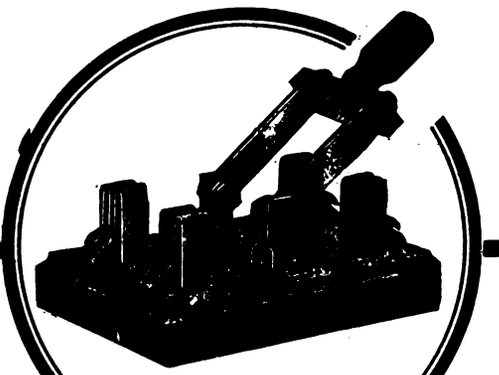

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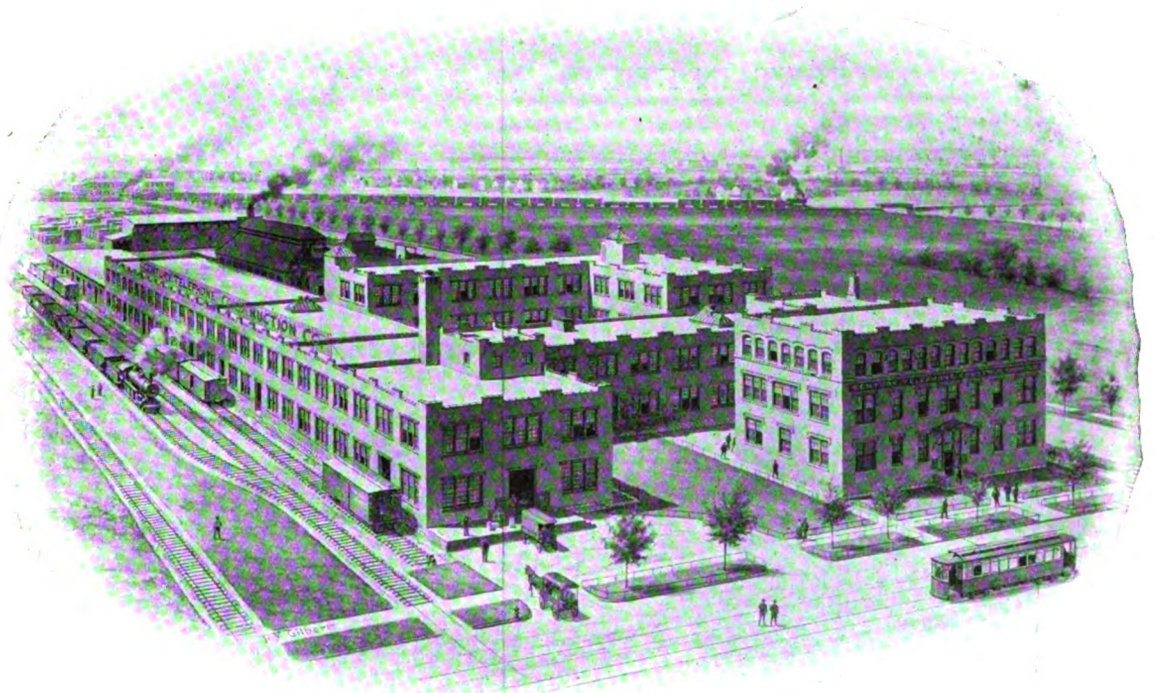

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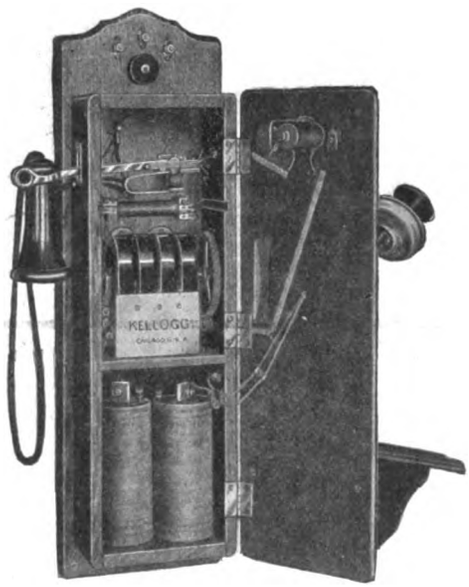

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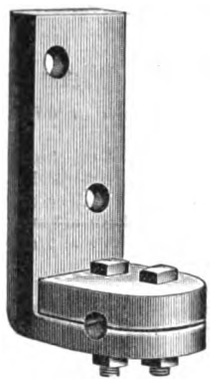

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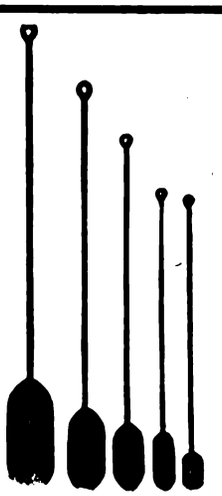

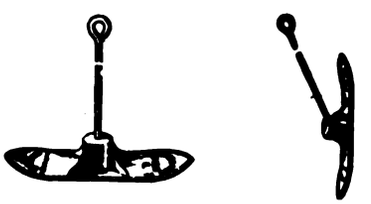

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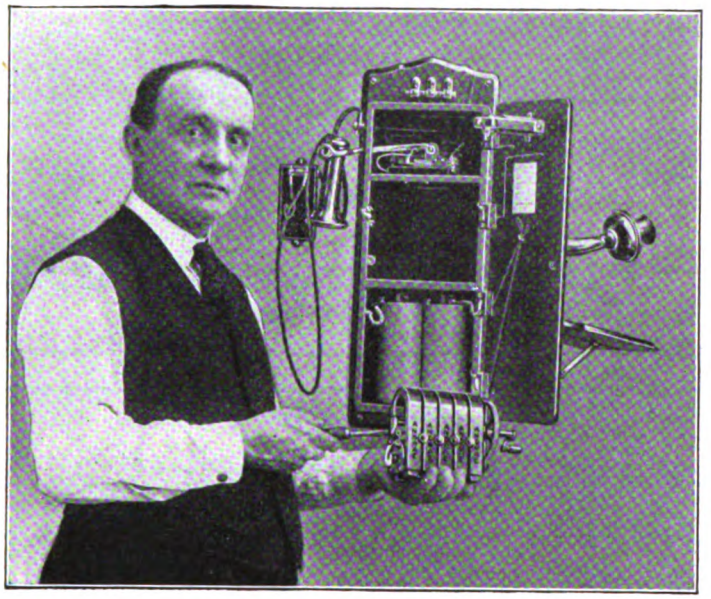

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You will notice I still have a condenser attached to my instrument. I told you a little about this last month. If I could not get another, money would not buy this one. You people who are operating party lines without condensers, and wearing your lives out trying to chase up ringing troubles, don't know what you are missing. The sooner you get a few condensers on your party lines the happier you will be. If you are thinking of doing it to-morrow, do it to-day. It costs absolutely nothing to try them. **Prices:** No. 300, 85c. each. No. 301, 90c. each. Lots of 50, 10c. discount. Lots of 100, 15c. discount.

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Elevated Railroad Distribution of Telephone Wires in Brooklyn*

By Walter Graham.

TELEPHONE wires are carried to the foot of a support of the elevated structure in cable, which then passes up to a height of about ten feet in an iron pipe which protects it. From the upper end of this pipe the cable is carried across, often loosely suspended, to the cable box, located wherever convenient in the structure which supports the tracks. The open wires, in twisted pairs, are led out from the cable box to a roughly built, box-like wooden conduit, carried along on top of the ties, usually on the side of the railroad. In some places the telephone wires are reported to be less than a foot distant from the third rail, which carries the entire current for operating the heavy trains run over the road. The channel for the telephone wires is, in fact, so close to the third rail that often when the boards forming the cover are carelessly left open they are struck by the contact shoe of the motor car and thrown to the street. In view of the possible risk to pedestrians from such an accident the company has found it necessary to issue stringent instructions to its employees governing the opening of these conduits. Dismissal is threatened any employee caught leaving the covers open. In the illustration on this page the twisted paired wires can be seen as they leave the conduit and are carried across a bridge, pending the completion of some work being done on the railway. A little ahead of the point where the wires leave the conduit can be seen a section of the third rail. It is interesting to note that although there are electric light and signal wires below, the twisted paired wires simply lie on the surface of the structure and that the only insulating agency employed is the covering of the wires.

A Piece of Temporary Work on the Elevated Distributing System—Telephone Wires Led Out of Wooden Conduit at Left and Run Loose Over Bridge.

The terminal box from which these wires are distributed is a wooden double door affair. Access to the box is had by either climbing one of the columns or else by dropping down from the structure. Some times an extension ladder is used from the ground, but owing to the heavy traffic in the streets, which are occupied by electric surface lines, the placing of a ladder is almost an impossibility, and the men prefer to climb instead. Climbing one of these columns is in itself a hazardous undertaking on account of the number of electric light and trolley wires through which it is necessary to pass. There are few guard wires used by the trolley companies under the structure and it is an easy matter for wires to come in contact with them even when care is being exercised in handling the wires. Defective and dead wires are to be seen lying about loose on the girders and suspension wires, and the cables themselves are not protected from the structure by any recognized or approved form of guard.

Occasionally a piece of tape or a bunch of old wires is wound about a lot of wires as they lie on the structure as protection. Resulting from these methods are very heavy maintenance costs.

The wire used is mostly No. 14, braided and twisted, rubber covered. Starting from the terminal box the twisted wires run up between the ties and then into the wooden running box or conduit; thence along in the conduit until they come to a point opposite the building they are to serve when they pass out and down under the tracks, along on the wooden ties and break off from a cleat, knob, or hook insulation. Some times not even a cleat is used, in which event the wires simply lie on the girders and jump to the building. An idea of these conditions can be easily obtained by referring to one of the illustrations. In one of these views it can be seen that the wires pass directly above the signalling and

*Continued from the issue of April 13.

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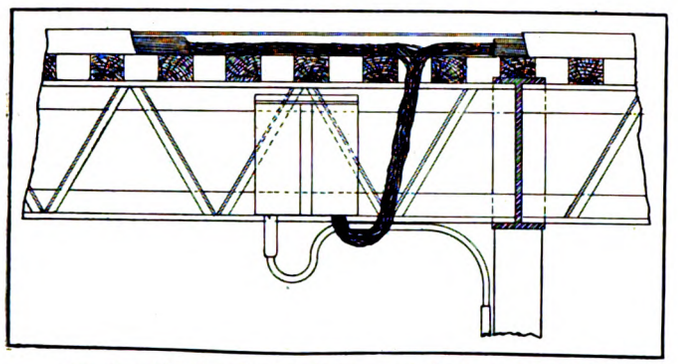
lighting wires, strung on the cross-arm extending out from the structure. Considering the bulk of wires and the poor manner of supporting them it is marvelous that they manage to keep clear of the other currents as well as they do.

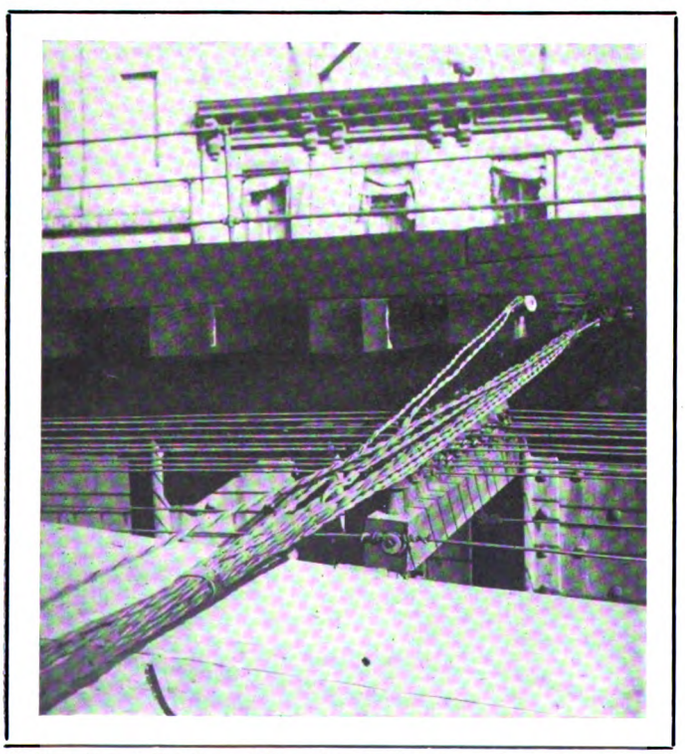
Leaving the elevated structure to trace out a few runs of



Drawing Showing Typical Features of Railway Distribution.

wires, one comes upon other conditions which are in the same class with those on the railway itself. Supports are left out and the wires are allowed to lie unprotected on the roofs of buildings in bunches for two hundred feet or more in a stretch. At street crossings and other points cables and wires make spans from the structure to the roofs of buildings two hundred feet away. These wires sag to within twenty-five feet of the ground crossing above electric light and trolley wires. From the elevated structure loosely fastened bunches of wires jump almost straight up to the roofs of buildings six stories high, without being properly supported by a messenger. Why the wires do not break at the points of support on account of being constantly swayed back and forth by the wind is another marvel that speaks well for the peculiar powers which protect this system.

Whenever a lot of wires follow a brick wall it is noted that numerous small screw eyes are used instead of one ring large enough to accommodate the entire bunch. This is explained by the fact that the screw eye used is closed up entirely, and does not permit the wireman to replace it with a larger one without cutting the wires. Rather than to cut the wires and splice them up again he simply inserts another screw eye into the run to care for the additional line. The illustration showing the wires run along the brick wall brings out the features of such a run



Twisted Paired Telephone Wires Brought Out from Conduit on Elevated Railway Structure and Run Loosely Across Roof of Temporary Building.

that tell the tale better than words. The whole system is a most interesting illustration of the fact that work which is assumed to have a temporary quality may very easily degenerate into a trouble nest. It is very strongly contrasted with modern methods of distribution, some of which may be observed in the outskirts of the very same city of Brooklyn where the lessons of danger and expense, learned from the old elevated system, laid out in the early days of telephony and not yet replaced, have been kept in mind.

Method of Carrying the Same Wires Shown in First Illustration on This Page to Local Terminals.

MANY KENTUCKY TELEPHONE MEN MEET AT PADUCAH.

MEN in all walks of life, as well as men making a specialty of the telephone business, were present at the meeting held March 29th at Paducah of the Kentucky Independent Association. Thirty-four counties, constituting what is known as District No. 4, of Western Kentucky, were represented.

The meeting was called to order promptly by President Frank G. Hoge and after the usual business had been completed Mr. H. J. Jeffrey, manager of the Paducah Home Telephone Company, gave a very interesting talk on Telephone Equipment and Standardizing Toll Apparatus. He also gave a very complete report of McCracken, Marshall and Calloway Counties. His report was a pleasant surprise to all present, inasmuch as it showed an increase of almost 50 per cent. since the last meeting.

Mr. J. F. Nichols, a prominent lawyer from Bardwell, gave an interesting talk on Financing Independent Local Exchanges and the importance of all Independent companies working together. He emphasized the desirability of taking advantage of every opportunity to have the public realize the necessity of supporting the Independent companies.

Mr. J. E. Bridgewater of Bardwell, local attorney of the Illinois Central Railroad, made a very spicy talk on general principles pertaining to the Independent movement and the great success that all Independent companies have made through this section.

Mr. A. W. Surrell, Traffic Manager of the Central Home Telephone Company, Louisville, Ky., spoke on the subject of Long Distance Service and Connection. He went over the plans which the Long Distance Company is making for furnishing the various Independent companies through this section with an up-to-date long distance system, and insisted on the importance of all local managers not attempting to give free exchange of

(*Continued on Page 261.*)

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Hints on the Handling of Long Distance Traffic*

By R. A. Walker.

FEW Independents realize that in their toll business they have as truly a commodity to sell as any tradesman or manufacturer. The use of a telephone is largely a matter of habit, a habit formed by education to its usefulness. It then remains for the Independent manager to educate the people to the general use of the Independent long distance lines and enter into competition with the United States mails. There are several methods of creating a demand for long distance service, but it is quite necessary to first have the necessary lines to carry the business after it has been created and also that they shall be efficient in operation.

The mere fact that satisfactory service can be had over Independent lines is hardly known to 25 per cent of the people. It is necessary to overcome this view, either by legitimate advertising in newspapers, through circulars and such other methods as may commend themselves, or by personal solicitation. In the detail of answering subscribers, let the word "toll" be abandoned and following the State Agent, Mr. Hollis, talk about "Long Distance." Carry the thoughts of the prospective user from the fact of the cost to the reality of the service.

R. A. Walker, Manager, Mutual Telephone Co., Des Moines, Iowa.

An actual desire to talk can be created in the human mind by proper incentive. It then remains but to convince the subject that you possess the means of transporting his thoughts. There is a fascination about long distance talking that will grow, and having produced the incentive to talk, the means must be ready of access. The accomplishment of the desire to talk must be as easy and satisfactory as possible.

The actual information necessary for the recording of the message should be taken with as little friction as possible and every effort must be exerted to assure the subscriber that the message is in good hands and will be properly taken care of.

Instruct operators to hold a party on the wire as short a time as possible, and release the calling party until the called party has been secured. A person who is listening to the efforts of the operator to get through is sure to think that he could improve the method, and reduce the necessary information. The full information must be secured before the talks begins, as the things that are to be done after a while very seldom materialize.

While the talk is on be sure there is no interruption, as one small interruption will destroy all the virtue of an otherwise good talk in the mind of the user.

Let us create in all our offices the habit of dispatch. We are, as a whole, slow on the receiving end; we have too much of the idea that the message doesn't amount to anything to us. Get over it! Instruct your operating force to rush calls through and expect that, "as you do unto others, you will be done by." All of these little details go to make the perfect service.

All know that there are periods in some days when great trouble is experienced in handling the business, while at other periods of the day the number of calls could be greatly increased. How to keep all available lines busy without congesting traffic is one of the big problems with which one must deal. It is often found that a street in a city is congested at certain hours of the day, to such an extent that it is of little or no use; just so it is necessary to see that telephonic roads are kept free from any such congestion, and to direct the flow of business from the more busy hours to the less busy ones of the day. This may be accomplished in several ways, and primarily by educating the heavy users to this fact, eliminating deadhead calls, etc. Heavy day loads are often relieved and transferred to night loads by the use of a night rate, which may or may not be a wise expedient.

In smaller stations, probably the need of this is not felt on local wires, but it will be noticed that at certain hours of the day it is almost impossible to secure the "through" wires. This difficulty may again be relieved by duplexing present circuits and using the telegraph for order circuits, by keeping each call ready for the wire at the termination of its predecessor, and not waiting for the clear wire before getting the second talk ready. This point depends largely on the personnel of the operating force and its discipline. The operators must be carefully taught to use code words, and cut all use of toll lines for which payment is not made by subscribers to a minimum.

A reduction in the stress of the busy periods may be made also by the more rigid enforcement of the time limit, of reducing from the five to the three minute limit, during these periods, and again by teaching heavy toll users to bunch their calls for the slack periods of the day. Much time is saved for them by allowing them to talk to their parties one after the other, with the second party right on the wire as soon as the conversation with the first is finished. In this way the man can marshal his facts better and retain the wire a shorter length of time per talk. It will always be found that when calls are held any length of time that the average talk, by actual calculagraph test, is longer, tending toward an additional retardation in the speed of calls.

If the Independent companies are to carry the bulk of the telephone messages of the business world they must have their wires clear for conversations at all hours of the day. As for the operators, it is to be borne in mind, that "A soft answer" not only "turneth away wrath" but also makes a contented subscriber.

*Abstract from an address delivered at the Iowa convention.

Standardization of Toll Line Equipment*

By W. J. Stanton.

THE words "standardization of toll line equipment" are at first associated in the mind with ideas of telephones and switchboards, all built after a uniform design, with similar parts of various makes interchangeable. A second thought, however, gives a broader vision. Toll line equipment has a broader meaning than switchboards, circuits and telephones. It includes all the physical accessories necessary for carrying toll business.

*Abstract from an address delivered at the Iowa convention.

A short time ago a very significant interview took place between the general manager of the Chicago Telephone Company and a number of Chicago aldermen. Mr. Hibbard was defending the Chicago Telephone Company's right to a monopoly of the telephone business in the City of Chicago. His principal argument was that the Chicago Telephone Company was the only company qualified to give efficient *long distance* service. Why? Because it was affiliated with the A., T. & T. Co. And why

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could not other companies compete with the A., T. & T. Company for long distance business? Because the A., T. & T. Company was able, because of its monopolistic power, to control its terminals and by means of "standardizing" its equipment to "harmonize" its service. His answer was pregnant with meaning. Every clause could be made the subject for a text book. Standardization was the means, "Harmonization" was the end, and Monopoly the agent.

W. J. Stanton, Waterloo, Iowa.

King George scoffed at the thought of harmony among the colonies, just as the "Dictator" in Boston scoffs at the possibility of harmony among Independent telephone companies; but history has demonstrated the fact that the path of progress lies in the direction of Harmony without a Dictator.

Toll Line Equipment, naturally falls under six distinct divisions:

Central Office Equipment.
Station Equipment.
Line Equipment.
Accounting Equipment.
Advertising Equipment.

Miscellaneous Equipment is necessary for the efficient organization of various companies for the purpose of handling inter-company affairs.

As it would be utterly impossible under the limitations of this paper to enter into the details of each of these topics, the aim will be rather to impress upon the minds of its readers the importance of further discussion and careful consideration of the problems set forth.

Early in the history of railroad engineering it was found necessary to standardize along a few fundamental lines. For instance, the tracks must all be of the same gauge, the trucks of the same height, the couplers so constructed that all kinds of cars can be coupled together. In the same general way must telephone men standardize switchboard and station apparatus. Absolute standardization of this apparatus would do for telephony what Buddhism did for China. However, such fixed principles should be laid down as a basis for construction of toll line, switchboard, and station apparatus, governing circuits, and mechanical accessories, including the quality of the material entering into the construction of such equipment, as would preclude the possibility of "Cheap John" apparatus being palmed off upon the unskilled purchaser, and thus destroying the efficiency of a service which otherwise might be excellent. It is true that leaks due to low resistance coils bridged across a line at terminal points cause a far greater loss of talking efficiency than the actual resistance or capacity of the line. The writer has found that at least seventy-five per cent. of the chronic cases of toll line trouble at the stations belonging to and connecting with several of the largest toll line companies in the State have been caused by circuit trouble that could be easily avoided by following a standard set of circuit specifications.

The standardization of line equipment is easier of accomplishment from the standpoint of the engineer. It is absolutely essential at the present stage of development. During the Russian-Japanese war the Trans-Siberian railway service failed because of one weak point, causing untold disasters at the front. Just so a toll line is no stronger than its weakest point.

Standard construction is necessary before there can be any just apportionment of profits between connecting companies. At this time, when the Independent companies throughout the State are combining to build toll lines and heavy trunk lines for carrying long distance business, it is especially necessary that they immediately confer and agree upon a set of standard specifications, and thus avoid the injustice and the almost endless trouble and controversy sure to result unless standard construction is employed by the different companies who are parties to long distance traffic arrangements.

The following incident will show what can be done in the way of standardizing central office and sub-station construction: The superintendent of a company controlling a number of long distance lines and exchanges recently had occasion to inquire of one of his station agents why a certain extensive user of long distance lines did not give the Independent company more of its long distance business. The agent replied that he could not give first-class service to the stations most used by his patrons, and consequently the business went to a competing company. Thereupon the superintendent immediately required the local agent to furnish him a list of the parties called by the patron, and at once notified the agents at those stations to place the lines of the particular parties wanted in first-class condition, soldering all connections, and giving the lines and instruments a thorough overhauling. He also instituted a careful inspection of the office equipment and all defective circuits and equipment were re-arranged or replaced. The results were all out of proportion to the effort.

Stations whose agents or managers had been for months complaining of poor lines suddenly found that the old and supposedly worthless circuits were giving a fair grade of service. The business at the station referred to was nearly doubled. Letters to connecting companies, in some cases, met with prompt and cordial response; in others, a curt denial of any existing trouble at that station. Where co-operation, and to a certain extent standardization was secured, excellent, and in some cases surprising, results were obtained, bringing about great benefit to all concerned. Where co-operation was refused, the same old story continued, and the local companies are still "roasting" the long distance company and its lines, while that company is giving excellent service to all but the "kicker."

Here is lack of harmony, due in the first place to a lack of standardization; and secondly, a lack of standardization, due to a lack of harmony. And here, too, is a loss of thousands of dollars annually to the companies which do not appreciate the existence of such a condition in their own plants.

Standard accounting has already received considerable attention, and the result is the Clearing House. There remains but one other subject—standard advertising. There are but two "systems"—the Independent and the Bell. Systematic advertising pays. If you doubt it just follow the policy and the result obtained by our competitors.

Iowa has the name of being the foremost State in the Union in its wonderful telephone development; yet she sees her sister States, Missouri, Illinois, Indiana and Ohio, taking the lead in an effort to standardize and harmonize. Thus far only the surface has been scratched, but there have been revealed traces of hitherto unthought of sources of wealth. Present properties may be increased in usefulness and consequent value, and undeveloped resources may be uncovered by a concerted effort in this direction. It is the writer's firm

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belief that all companies interested in Independent long distance business would receive large returns on their investment by referring these questions to competent and energetic men, with instructions to work out the details.

Rural Party Line Ringing Codes*

AN objection to the code published on page 190 of the March 23d issue is made by F. E. Furry, Alden, Ia., in the following letter: "It seems to me that this code is so intricate that it deserves criticism, more particularly so as the author invites a reply. It imposes an immense mental tax on the operator, who has to remember so many arbitrary calls, none of which bears any relation to another. A code which we have used successfully for many years is made up of the combinations of rings shown in table 1.

"In this code the only purely arbitrary rings are 6 and 7. It will cover as many as twenty telephones on a line without confusion by combinations of figures, as 26, two short, one long; 37, three short, two long, etc. For calling the central office we use 62, one short and two long. Party lines are numbered to

1 ·	3 · · ·	5 · · · · ·	7 — —
2 · ·	4 · · · ·	6 —	

Table 1.

correspond to the drops, and the numbers in the directory are listed as follows: Hoffman, Sylvester, 113 r 72. The subscriber repeats this one thirteen ring seventy-two.

"We seldom use more than two figures, although 161 and 616 are exceptions. A single ring is used for clearing out. We use no spaced calls. Double numbers, as 11, 22, etc., are, of course, avoided."

A code designed by Major F. P. Kinder, Collinsville, Ill., and now in use at the exchange at Vandalia, Ill., where it was first put in operation, is shown in Table 2. Figures in the units and tens positions are for the line number, and those in the hundreds and thousands position for the ring numbers. The example in the table is for line No. 9.

F. W. Swift, manager of the Alden Telephone Co., Alden, N. Y., contributes a code used on a 100-drop two-way selective board.

Numbers to be rung selectively by pulling the key toward the operator are denoted by a single number, separated from the line number by a dot, as 10.2. Numbers to be rung by throwing the key back are indicated by the ring number following the figure 1 after the dot, as 10.12. All rings up to 6 are short rings. Above this a cipher, denoting a long ring, is interposed. Thus 32.01 denotes one long, one short ring, with the key pulled

509 — ·	1509 · — ·	2509 · · — ·	3509 · · · — ·
609 — · ·	1609 · — · ·	2609 · · — · ·	3609 · · · — · ·
709 — · · ·	1709 · — · · ·	2709 · · — · · ·	3709 · · · — · · ·
809 — —	1809 · — —	2809 · · — —	3809 · · · — —
909 — — ·	1909 · — — ·	2909 · · — — ·	3909 · · · — — ·
1009 — — · ·	2009 · ·	3009 · · ·	4009 · · · ·
1409 · —	2409 · ·	3409 · · · —	

Table 2.

toward the operator on line 32. The long ring is preferably given first as a better warning to the subscriber, in order that he may count the rings correctly. A person not acquainted with subscribers nor their calls could very easily operate a board with this system.

The Corning Telephone Company, Corning, Ia., uses a code, designed by the president, John A. Anderson, very much like that contributed by Mr. Furry. The only difference is that 6 is rung with six short rings, and seven with one long ring. Combinations are built up in the same manner as in Mr. Furry's code. This company employs an unusual method of directory listing, the ring number coming first, then the name of subscriber, followed by the line number, as for example: 1771 Dunn, Robert, Line 30.

1 · —	5 — —	9 — — ·	13 · · · —
2 · · —	6 · ·	10 — · —	14 — · · —
3 · · ·	7 — · ·	11 · — ·	
4 — ·	8 · — —	12 — · · ·	

Table 3.

The Dassel & Collinwood Telephone Exchange Company, Dassel, Minn., limits the number of subscribers on a line to fourteen. The code used for ringing on these lines, contributed by W. S. Jones, manager, is shown in Table 3.

One long ring is the call for central. In the directory the ring number is separated from the line number by a dash.

S. E. Clapp, manager of the exchange of the Hawkeye Telephone Company at Adel, Ia., submits the code shown in Table 4, which, although it must be memorized, can be quickly learned by an operator.

1 —	8 — — ·	15 — · — —
2 — —	9 — — · —	16 · —
3 — — —	10 — — — ·	17 · · —
4 — — — —	11 — — · ·	18 · · · —
5 — ·	12 — · —	19 · · — —
6 — · ·	13 — · — ·	20 · — ·
7 — · · ·	14 — · · —	21 · — · —

Table 4.

In the directory listings the ring number is separated from the line number by the letter L, as 8 L 36.

From M. L. Golladay, secretary and manager of the Holden Telephone Company, Holden, Mo., comes the following criticism, and also a statement concerning his code:

"Our principal objection to most of those so far published is the fact that they all contemplate a code which has to be memorized, hence new operators, or new subscribers are for a time 'at sea' until the code is learned. On our switchboards, which have combined drops and jacks, all party lines are brought in to contiguous rows at one position. These rural party lines are designated, not by numbers, but by letters on the jack number plates, and stamped or painted in white on the drops. We start in with vowels, and then use combinations of letters, choosing such combinations as do not sound too much alike. When we run out of letters, as we do on some boards, we use prefixes, like south, east, west, red, black, green, etc.*

"Ring numbers are made up simply of combinations of the figures 1 and 2; all that has to be memorized is that 1 means a short ring and 2 a long ring.

"This makes the work very simple as when an operator receives a call for A 21 all she has to do is to plug in on the jack below drop lettered A, ring one long and one short, and the trick is turned. Combinations for parties up to 20 on a single line can be readily made up without involving too much ringing."

The Whitewater Telephone Company uses combinations of figures for its ringing code. It is necessary to remember the significance of five figures to translate all these combinations

* Continued from previous issues.

*Editor's Note.—Why not paint the ring number with red or green paint on the drop, instead of white, rather than use the word Red, Green, etc.?

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into rings. The figures used are 2, 4, 1, 3, 5, and 6. The rings corresponding to these numbers are as follows: 1, -; 2, —; 3, - -; 4, — —; 5, - —; 6, — -. The company operates several switchboards, Elbing, Kechi, McLain, etc., and the initial of the proper name is prefixed to the number to denote the switchboard to which the line is connected, only one directory being printed. The last two figures in each number indicate the ring, the others the line. For example, E 7251 in the directory means ring one short, one long, one short, on line 72, Elbing switchboard. All necessary information is printed in the directory. This information is furnished by J. D. Joseph, secretary of the company.

Roy C. Hall, manager of the Ellis Telephone Co., Ellis, Kas., writes as follows:

"We began with our country lines by giving the first line the number 300 (allowing all numbers below this for town subscribers), leaving out the number 301 and numbering the telephones on the line from 302 to as many as there were instruments on this line. The next line built was given the number 350, and we began to number the telephones on this line with 352 and continued the numbering. A code of rings was made up as shown in Table 5.

302 ss	313 sssLs
303 sss	314 sLss
304 ssss	315 ssLss
305 Ls	316 sssLss
306 Lss	317 sLsss
307 Lsss	318 ssLsss
308 sL	319 LsL
309 ssL	320 LssL
310 sssL	321 LsssL
311 sLs	322 LsLs
312 ssLs	323 LsLss

The subscriber's name appearing on the directory:

305	Smith, John,	Ls
355	Smith, James	Ls
405	Jones, James,	Ls
455	Jones, Charles	Ls

Table 5.

"The arrangement of the directory with the 's' and 'L' following the name gives the parties on the same line the proper code by which to call those on their own line and all the operator in the office has to commit to memory is the simple code—the number as called for giving the cue to the line and the code ring. Subscribers know and speak of the lines by their number. We do not use the combinations ss and LL as they are confusing.

"Where the number of telephones on a line does not exceed twenty the code is not complicated and with reasonable care mistakes seldom occur."

The experience of C. D. Warner, manager of the Citizens Telephone Company, Watertown, N. Y., is briefly summarized in the following letter:

"The writer has found the following code the simplest for rural line ringing.

"Reserve one ring for Central, use 2, 3, 4 and 5 short rings for their corresponding numbers, then repeat the same rings, preceded by a long ring, say three times the length of the short rings, which means add 10. This would mean that one long and two short rings corresponds to the number 12; one long and three short, 13, and continue this until fifteen is reached, then prefix two long rings and a short for 21. Three long and a short for 31.

"The particular advantage in this code is in printing the directory, when the calls can always be printed in figures, similar to a fire alarm code, thus: 275-14 would indicate drop 275, ring, one long and four short rings. The writer has always found it best to avoid a telegraph code or any rings that could not be designated by figures."

For an express board the Clay Center Telephone Company, Clay Center, Kansas, uses the plan of designating jacks and drops by letters, and ring numbers are made up by combinations of figures 1 and 2 in the manner described by Mr. Golladay.

M. C. Wilson, the company's wire chief, in addition to giving this information, gives combinations which will cover a line having 28 parties, "just exactly sixteen more than the law should allow any manager to put on one line." These combinations are made up to keep the number of rings as low as possible for each party, and appear in the following sequence, numbers involving the least ringing appearing first: 1, 11, 12, 22, 21, 111, 112, 121, 211, 122, 221, 212, 222, 1111, 1112, 1121, 1211, 2111, 1122, 1221, 2211, 2112, 2121, 1212, 1222, 2122, 2221, 2212, 1222, general call, 2222.

(*To Be Continued.*)

Important Lessons in Rural Service*

By Thomas Bromley, Jr

OUR country districts are becoming more thickly populated, and because of this no telephone company has yet built a line where the requirements have not exceeded their expectations. This being the case, most of the companies are up against the proposition of building new and heavier construction before the life of the present construction is half completed.

Many of the more experienced telephone men have found it advisable to make a map of each proposed line, showing the actual and the probable subscribers, and counting upon seventy-five to ninety per cent. of the probable subscribers being actual suscribers before many months have rolled by. Careful estimates of the cost of construction should be made before proceeding to build. Materials should all be on the ground and telephones ready to install before anything is done toward actual work.

Arrangements should be made in the country for board, etc., before construction crews are sent out; the foreman should know just what is going to be done, and how, and, above all, use the best of materials and workmanship—it is economy in the end.

Contracts should be taken which should state distinctly what service is to be given and for how much. Nothing is so unsatisfactory as doing business with the general run of farmers when there is no record of what is required of the subscriber or company.

It is surprising how much easier it is to make collections when the farmer can be shown that the telephone manager knows all about what service he has had, for he is often a procrastinator in paying his telephone bill, and when he is in arrears and has been urged pretty hard to pay up he is liable to come back with a cry of poor or unsatisfactory service.

To show him a record of the condition of his line and telephone has a very quieting effect. It is important that such a record be kept for this purpose, if for no other, although there are many others, like keeping in touch with the work of trouble men.

Some situations make it necessary that the company require the subscribers to build their own poles lines. From experience the writer would suggest that under no circumstances would it be advisable to build without a contract giving the company exclusive possession of these poles upon the placing of its wires upon them, as in many instances the subscriber feels he owns these poles and should be paid for them, should the company wish to take on other neighbors just beyond.

There are few companies who are making the mistake of allowing their subscribers the privilege of free county service, but to those who are, and to those who have a mind to do so, there is just one word to be said: "Don't." In a certain locality this class

(*Continued on page* 260.)

*Abstract from an address delivered before the recent meeting of the Michigan Independent Telephone Association at Coldwater.

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QUERIES

RELAY TROUBLE.—(847.)

On our system, which is a Kellogg common battery, four party, harmonic selective, we had a peculiar trouble a few days ago which cleared itself. We are unable to understand the cause of this trouble. The circumstances attending this case are as follows:

A two-party line having two subscribers upon it was reported out of order. Either party on the line could be called from the central office and could talk all right, but was unable to signal the operator with the line signal. The supervisory signals worked all right when this line was connected with another line, but immediately the connections were taken down the subscribers on the line were unable to secure the attention of the operator. The trouble was called to our attention several times, and in each instance we made a test on the line, which showed a ground on the tip side out of the exchange. The subscriber, who is a telephone man, was so insistent, however, that the trouble was not outside, that, in order to convince him, we put the line on test. We then opened the line and tested out, but found that the ground had disappeared. Then upon testing in to the operator we found that the signal came in all right. This struck us as being peculiar. We then closed the line again and called one of the subscribers and requested that an attempt be made to get the central office. This the subscriber did, and was able to secure the operator's attention in the usual manner. We then tested on the line again, and found that the trouble had entirely disappeared. Any information you can give us as to why this trouble should appear and disappear in this manner will be greatly appreciated. B. B., N. Y.

Your trouble was evidently due to the sticking of the subscriber's line relay in the exchange, which stuck in such a manner as to indicate a ground on the line when you tested upon it. However, upon opening the line, and short circuiting it at the exchange to ascertain if the line signal would operate, you caused a greater flow of current to pass through the relay, owing to the smaller amount of resistance in your short circuit than in the resistance of the line, thereby causing the relay to have a greater magnetomotive power to overcome the sticking of the relay armature. This seems to be proven from the fact that after making the test that you did for securing the attention of the operator the line was in perfect condition. We would suggest that you examine this relay, and adjust it so that it will work with the minimum amount of current, in order that the trouble may not occur again.

REVERSED CONNECTIONS ON GROUNDED SWITCHBOARD.—(848.)

In our switchboard, which is a one hundred-line board, we have a peculiar trouble. When line 63 is connected to line 47 the subscribers on these lines cannot talk to each other at all. The operator can talk on either line alone, but it is impossible for her to talk to either one when they are connected together. We thought at first the trouble was in the switchboard keys, but it acts the same on all the cords, so it cannot be there. Will you please tell us what the trouble is? Our system is grounded. B. L. F.

The trouble you are experiencing is in all probability due to the fact that you have connected the wrong side of one of the switchboard line jacks to ground, as shown in Fig. 848*a*. This would leave the circuit all right when the operator is connected to either line, but you will note immediately the operator cuts

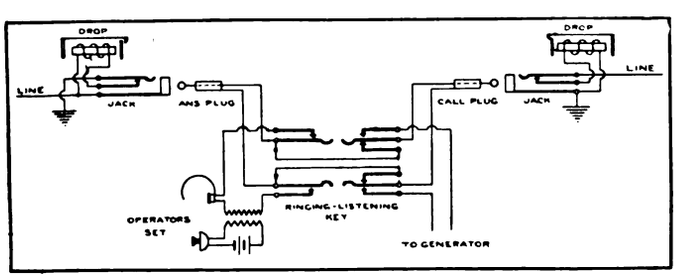

Fig. 848-*a*

out her listening key both sides will be bridged to ground, thus short circuiting the line, and thereby cutting out the subscribers as the sleeve of one jack will be thrown to ground through the sleeve of the other jack and the tip of the second jack will be thrown to ground through the tip of the first, so that each line will be grounded at the jack of the other line.

If you will connect your switchboard with the same sides of all the jacks to ground you will not experience this difficulty.

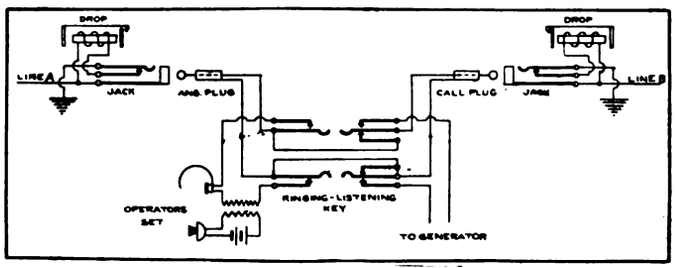

Fig. 848-*b*.

The correct manner of making this connection is shown in Fig. 848*b*. The grounds on the jacks in this circuit do not enter into the talking circuit of the two connected subscribers at all; their circuit being from the ground at instrument on line *A* to the ground at instrument on line *B* onto the line through the sleeve of one jack and the cord to the sleeve of the other jack on to the line and back on the other line to instrument on line *A*.

The ground at the switchboard is provided so that the subscribers may signal the operator and also allow the operator to bridge her talking set on to the line and ground. The set being connected to line through the sleeves and the ground through the tips of the jacks, for the purpose of conversing with the subscribers.

RESISTANCE ON LINE WHEN INSTRUMENTS ARE ADDED.—(849.)

We have a line 18 miles long built of No. 12 iron wire. If we put a bridging telephone in the middle of it, bells 1,600 ohms, induction coils 100 ohms, receiver40 ohms, what resistance do we add to the line and what resistance would two or three bridging telephones add to the line? C. J. W.

In bridging telephones across your line you do not add resistance to the line. What you do is to provide a shunt over which a portion of the current thrown on the line will travel. If you were measuring the line at one end for resistance you would find that the resistance indicated would be less each time you bridged an additional instrument across the line.

The resistance of a line with shunts of this nature is arrived at by dividing the product of the resistances by their sum. By referring to Query No. 816 in the issue of January 19, 1907, of THE AMERICAN TELEPHONE JOURNAL you will find the measurement of shunts worked out in detail on a long line.

STATEMENT OF OHM'S LAW.—(850.)

A telephone man who is an expert on testing lines and cables was recently in our exchange and gave me some information in relation to testing. In his talk he frequently referred to Ohm's law. Will you kindly give me a simple, detailed explanation of what constitutes Ohm's law? R. B.

Ohm's law can be stated simply in the following manner: The strength of the current varies directly as the electro-motive force, and inversely as the (total) resistance of the circuit. Using the units adopted by practical electricians, you can restate Ohm's law in the following manner: The number of amperes of current flowing through a circuit is equal to the number of volts of electro-motive force divided by the number of ohms of resistance in the entire circuit, or the current equals the electro-motive force divided by the resistance.

For simplicity in figuring this relation is expressed by the formula $C = \frac{E}{R}$, C being the amount of current, E the voltage, and R the resistance in ohms in the circuit in question.

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THE EDITOR'S PAGE

DUST AND CENTRAL OFFICE DEPRECIATION.

THE rate of depreciation of central office apparatus is a subject frequently discussed by telephone men when they get together. Perhaps too much time is spent in trying to arrive at conclusions on the assumption that this rate of depreciation is a fixed quantity, which can be discovered by combining experiences, and set down in the books and always reckoned upon in the future. This, however, is hardly true. Depreciation in value progresses more or less rapidly in accordance with the amount of care bestowed upon the apparatus, in keeping moving parts well adjusted, and protecting them from all sorts of damaging influences. One of the most important of the minor things against which switchboard apparatus should be protected is the gathering of a dust deposit upon various parts.

In large exchanges the most careful precautions are taken to keep the amount of dust to a minimum. Heating and ventilating systems are so designed that all air which reaches operating and terminal rooms passes through canvas, or some other straining device, which retains all dust particles, allowing only clear, filtered air to pass to the parts of the building where it may come in contact with the equipment. In these buildings reliance for ventilation is placed entirely on the ventilating system, and windows are not opened to let in the dust of the street and smoke from the thousands of city chimneys. Even when such care is used it has been found that much dust is brought in adhering to the clothing and shoes of employees, and this is removed at frequent intervals. Floors, switchboards, etc., have to be cleaned at frequent intervals—cleaned carefully, so that the dust will be removed, and not simply stirred up, to pass from one place to another where it will be perhaps even more harmful.

In small offices such care is generally more conspicuous by its absence than for any other reason. The man owning a hundred line switchboard seems to thing it makes little difference whether it lasts ten years or twenty. Yet the same man is likely to bestow on a watch, having a quarter the value of his telephone equipment, the most painstaking attention.

Dust deposits in jacks, as is well known, are frequent causes of poor contacts, which lead to service complaints, and of actual cutting away of the springs, so that plugs do not fit accurately. We have seen jacks of the cut-off type, carefully made and adjusted, so that little movement of the line springs was necessary to free them from the contact studs, with deep grooves cut in the springs. The result, when a plug was inserted, was a weak and wobbly connection, producing occasional cut-offs, and even failing to disconnect the line drops, owing to the play of line springs being too small to free them from the inner contact studs.

Springs of keys are made to wear more rapidly than they should by similar causes—simply the grinding action of sharp dust or grit between moving parts. The removal of relay caps, and leaving of switchboard curtains open is a practice common in some offices, which should be strongly prohibited, and rules designed to prevent this practice ought to be rigidly enforced. The accumulation of dust in relays especially causes poor contact troubles which affect the service, and cause undue expense on account of the time taken up in clearing them. Even between metallic parts which are not subject to motion a dust deposit is dangerous, as when moistened it lowers insulation, and causes a certain amount of leakage. Many cases of cross-talk and ringing noises on talking circuits have been traced to this simple source.

If every man who wants to keep at the lowest point the depreciation chargeable to the apparatus in his care will simply go over his own experience he will find many things which will point toward the importance of keeping dust out of his central office. These considerations should lead to more adequate precautions in such matters as providing some simple filtering devices at windows which are opened for ventilation, the keeping of overcoats, rubbers, etc., in rooms separate from the operating room, provision of door mats, separation of public offices and pay stations from the operating room, and the like. The results obtained will undoubtedly tend to make it easier to give a high grade of service without annoying breaks, and their cost is paid for in the increased efficiency and longer working life of the apparatus.

THE "TAKE BACK THE INSTRUMENT" IDEA.

"POOR batteries" was the diagnosis of the inefficient trouble man a few years ago when only the magneto instrument was known. Renewal after renewal was frequently made to clear up a trouble which actually existed in some poor contact in the instrument, the line, or even the central office. The inspector would go out, jiggle the hook up and down, listening and looking wise, blow in the transmitter, call central and ask for a long ring, and then say, "Who put in them batteries?" If the subscriber confessed that it was the man with the loud voice who "used to come around" the matter was settled, and the new batteries went in. Then the trouble was repeated, and came in again and again until everyone in the exchange was tired of chasing it.

Now the same kind of a "trouble hunter" goes to even greater lengths. He is unable to charge up his difficulties to poor batteries, in a central energy system, because they are beyond his reach. So the instrument has to bear the brunt of his assault. Down it comes from the wall, and back to the central office. If called upon for an excuse he is ready with the statement that it is cheaper to repair an instrument in the shop than out at the subscriber's station, and if the manager will let this pass he is ready to repeat the offence.

Now, a good many of the instruments so returned have nothing serious the matter with them. Even if there is some fault, it is usually one which could in fact be repaired at the station by a competent man at a lower cost than is involved in carrying the instrument to the central office, repairing it and again carrying it out and putting it in service. Moreover, the whole act produces a bad impression on the subscriber, who is led to believe that telephone apparatus is unreliable and inefficient. If he has ever considered an investment in telephone securities he becomes a bit skeptical as to the value of an investment in such a plant.

Correction has to begin with the trouble man. He needs to have the company's point of view explained, and some system should be devised which will enable the management to follow up all instruments returned from stations. For example, the trouble man might be required to report, before turning in the instrument, the exact nature of repairs required. An understanding as the amount and nature of repairs which justify removal can then readily be established. Further, checks can be made by keeping an accurate account of shop repairs on these particular instruments, and turning the whole report over to a competent official who makes it his business to investigate all cases which show improper conditions.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

PENALTY FOR OBSTRUCTING LINES.

What penalty, if any, is imposed in the State of Arkansas for obstructing a telephone line? What damages can the telephone company collect?

F. J. T.

ANYONE who wilfully or intentionally destroys, injures, or obstructs any telegraph or telephone line or any property or any material used in connection with it, is liable to a fine in the State of Arkansas of not less than two hundred dollars and may be imprisoned not more than one year. The person committing the offense would also be liable for double the damages sustained by the telephone company. This is upon the theory of inflicting an additional penalty for such a willful wrong as that would be, and to deter people as much as possible from interfering with the operation of a telephone line, which is, in a certain sense, a public business. Digest of Statutes, 1904, Section 1899.

RIGHT OF MUNICIPALITY TO PURCHASE TELEPHONE PROPERTY.

There is talk here about the city buying our telephone company if we do not comply with its ideas about extending our service. Our line is now built as far as we have capital to build it, and still pay dividends. We are making a fair earning on the amount involved, and do not wish either to sell out or to make expensive improvements. Would the city have any authority to buy, and could it do so if we were unwilling to sell? Some say that it might.

S. M. R.

THE laws of Minnesota authorize a municipality, at the end of any period greater than five years after the company has received a grant of permission to do business therein, to purchase the telephone property. The value is to be ascertained in the manner provided by law for acquiring property by eminent domain. Before the purchase is authorized, it must be favorably voted upon by two-thirds of the electors at a special election within three months before the end of the five year period. The consideration received is to be applied first to the paying up of mortgages and encumbrances, and the rest to be turned over to the owner of the franchise. As we believe this law has never been tested by actual experiment, we cannot say whether the municipality could force the company to sell, but that is apparently the intention of the law, as evidenced partly by the method of ascertaining the value of the property. This is in accordance with the laws of eminent domain, which are designed to force the sale of property by unwilling owners when public necessity requires it.

CITY RECOVERS PERCENTAGES PROVIDED IN FRANCHISE.

THE Supreme Court of New York has rendered judgment against the Home Telephone Company of Jamestown in that State for the amount of $1,140.08 which is one per cent of the gross earnings of the company during a certain period. When the company was granted its franchise, the following clause was inserted:

"It is also made a condition for the granting of this franchise, and the company by its acceptance, hereby agrees to pay to the city of Jamestown one per centum per annum of its gross earnings at and after the time that the said company shall have in operation 1,000 revenue earning telephones; and whenever said company shall have 2,000 revenue earning telephones, in actual operation, it shall pay to the city of Jamestown two per centum per annum of its gross receipts, and said company waives all right to have said percentage deducted from any taxes according to the provision of the tax law, and agrees to pay such percentage in addition to all taxes."

Presently the time came when the company had more than 1,000 revenue earning telephones in operation and a demand was made by the city for the percentage. This the company refused, taking the position that it did not need any franchise to do business in the city because the transportation law gave it ample power to set its poles and string its wires whether the city wanted it to or not. This contention would undoubtedly have been sustained by the court had it not been that in the charter of the city there was a clause authorizing the council "to prevent and to regulate the setting and stringing of telegraph and telephone poles and wires in said city." This clause the court held gave the city full power to prevent, prohibit, and regulate telephone companies.

REQUIRING PATRONS TO PAY BILLS AT OFFICE IS REASONABLE RULE.

IN the Circuit Court at New Orleans, La., Dr. J. A. McGruder, a dentist, sued the Cumberland Telephone & Telegraph Company with a view to testing the right of the company to require its patrons to call at the office to pay montly accounts. The plaintiff had declined to call at the office to pay his rental, and, after waiting the usual limit of time, the telephone line was plugged out of service, which, the plaintiff believed, entitled him to damages. The telephone company and the plaintiff introduced witnesses to substantiate their respective positions. After hearing the testimony, Judge Bullard gave peremptory instructions for the defendant company, holding that the rule did not seem, from the showing made, to be unreasonable. The plaintiff's attorney excepted to this disposition, and gave notice of appeal, which will throw the case into the Supreme Court.

RISK ASSUMED BY OPERATOR.

AN operator in the employ of a telephone company sued for injuries received while at work in its exchange, alleging that the company had failed to furnish a safe and suitable place for her to work and to maintain its wires and apparatus in proper condition. She testified that on a certain day she received sensations not before noticed, which produced, not a shock, but a "jarring and grinding or rumbling in her ears," which at times caused her head to ache. She also felt her side hurt her, and her arms "kind of tighten," but she did not lose consciousness. For some time prior to the accident the company had been receiving complaints from operators that this switch-board was not working properly and attempts had been made to remedy the difficulty. A verdict directed for the defendent was set aside. The court held that anyone entering the employment of a telephone company as operator at its exchange, assumes the ordinary risks of irritation reasonably connected with the performance of her duties, but does not assume the risks of shocks from an electric current, producing bodily prostration, though the degree of voltage is not sufficiently high to imperil life. The court found it to be the duty of a telephone company to provide and maintain suitable apparatus in its exchange so that the same could be safely operated, and held the case one for a jury to decide. Cahill vs. New England Tel. & Tel. Co., (Mass.), 79 N. E., 821.

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IMPORTANT LESSONS IN RURAL SERVICE.

(*Continued from page 256.*)

of service is in effect, and has been for so long that the people have become educated to it to such an extent that they cannot see what use they would have for a telephone if it were not for the county service.

In such a system, it was recently discovered, were over 500 free trunk conversations a day on a system of slightly over 1,600 telephones. That means 150,000 a year of three hundred days, and at ten cents each they would bring in a handsome income. Of course, the ten cents would cut out about sixty to seventy-five per cent. of the connections, and there would then be circuits enough to handle the business without being forever subject to the kicks of the business man who thinks the operator's "line is busy" is simply to keep him from talking. Free county service is an evil, and one of the greatest ones there is in the business.

Speaking again of collections—there is more or less expense attached to enforcing a collection in the country; but great good can be accomplished by following the plan of notifying delinquent subscribers that no connections will be given them from their telephones unless their accounts are paid by a given date. If they do not pay, have the operator inform them that she is instructed by the manager to allow no connections until notified to do so by him. It is well to allow others to talk to them for a time, rather than inconvenience the good-paying subscribers; but if this does not bring them in a reasonable time, there is only one alternative, and every one knows what that is.

In the writer's experience the most important thing to keep in mind is to have no misunderstanding with a subscriber as to what his duty is when you have performed yours. He must be made to understand that it takes money to operate a telephone plant, and that, no matter whether the telephone is used little or much, it has been at his service all the time, and you are entitled to your money promptly and as agreed. Prompt pay puts you in position to give prompt service.

Telephone Legislation in 1907*

WISCONSIN.

SENATE BILL No. 431, introduced by Senator Fairchild, February 12, 1907, and referred to Committee on Judiciary, is an act to amend Subdivision 2? of Action 1039 of the Statutes of 1898, relating to property of telephone companies exempt from taxation.

ASSEMBLY BILL No. 373, introduced by Mr. Kander, February 7, 1907, and referred to Committee on Transportation, is a bill to add to the statutes of 1898 a new section empowering the common council of any city of the first, second, third or fourth class to establish and regulate rates for telephone service.

ASSEMBLY BILL No. 330, introduced by Mr. Domachowski, February 6, 1907, and referred to Committee on Transportation, is a bill relating to the granting of full power of eminent domain to municipal corporations or counties over the property of a telephone company which may impair or inconvenience the use of public streets.

ASSEMBLY BILL No. 205, introduced by Mr. Wehrwein, January 31, 1907, and referred to Committee on Roads and Bridges, is a bill amending section 1329a of statutes of 1898, relating to the placing of poles in public highways. This act describes the distance at which poles should be set from the boundary of the highway, and the minimum height above the ground at crossings. It also relates to tree trimming.

SENATE BILL No. 92, introduced by Senator Froemming, January 31, 1907, and referred to Committee on Transportation, provides that the common council of every city of the first class is authorized to fix rates and regulate the service of telephone companies or other public service corporations.

ASSEMBLY BILL No. 596, introduced by Mr. Anderson, February 13, 1907, and referred to Committee on Transportation, prescribes limitations on the employment of telephone operators by railroads for duties connected with the despatching of trains.

SENATE BILL No. 410, introduced by Senator Sanborn, February 9, 1907, and referred to Committee on Judiciary, is a bill to amend sections 2 and 3 of chapter 304, laws of 1905, relating to the proceedings of commissioners on condemning lands by telegraph, telephone, power, heat and light companies.

SENATE BILL No. 510, introduced by Committee on Engrossed Bills, March 6, 1907, and referred to Committee on Transportation, provides for compulsory connection between competing telephone systems.

WYOMING.

HOUSE BILL No. 156 is an act to amend section 1 of chapter 50 of the Session Laws of 1901, relating to the assessment of railway, telegraph and telephone lines.

HOUSE BILL No. 87, introduced by Mr. Troyer, January 23, 1907, and referred to Committee on Corporations, prescribes conditions under which telephone wires may be erected over railway tracks, giving the Railroad and Warehouse Commission power to regulate such crossings, and making the minimum height 25 feet from wire to track.

ARKANSAS.

SENATE BILL No. 41, introduced by Arnold, Edmonson and Goodwin, makes it illegal to permit telephone wires, instruments or equipment to be used for the transmission of information for the use of bucket shops.

COLORADO.

SENATE BILL No. 283, introduced by Senator Parks, confers the right upon a telephone company to construct and maintain its lines and to cross upon or under railways and public highways, under proper conditions, and across public lands, and provides for the obtaining of rights of way either by the ordinary process of negotiation or by the exercise of the right of eminent domain.

CONNECTICUT.

HOUSE BILL No. 216, introduced by Mr. Higgins, and referred to Committee on Judiciary, provides that whenever portions of two telephone divisions or districts are included within the same town the charge for five minutes conversation between instruments located one in each district shall not exceed 10 cents.

ILLINOIS.

HOUSE BILL No. 381, introduced by Mr. Daugherty, February 20th, 1907, and referred to Committee on Municipal Corporations, is an act empowering cities, villages and incorporated towns to acquire, construct, maintain and operate telephone systems and other public utilities.

HOUSE BILL No. 199, introduced by Mr. McLaughlin, February 6th, 1907, relates to the placing of the control over wires to be strung over railway tracks with the Railroad and Warehouse Commission, and limits the height to not less than 25 ft. above the tracks.

HOUSE BILL No. 376, introduced by Mr. Smith, February 20th, 1907, and referred to Committee on Municipal Corporations, is a physical connection measure intended to compel telephone companies owning competing lines to connect their lines with each other. Rate limiting clauses fix a maximum rate for the rental of telephones at $3 per month for business houses, and $1 per month for residence, and a maximum rate for toll messages to any point within the State of Illinois not to exceed 75 cents for the first five minutes' conversation and 25 cents for each additional five minutes' conversation.

SENATE BILL No. 240, introduced by Mr. Glackin, February 14th, 1907, referred to Committee on Railroads, provides that it shall be unlawful to string wires over the tracks of a railroad except in such manner as shall be prescribed by the Raiload and Warehouse Commission upon application made after at least ten days written notice to the railroad whose tracks are so to be crossed, and such notice should state the time when application will be made and the proposed height and manner of stringing the wire. It is provided that in no case shall a distance less than 25 ft. be allowed between the tracks and any telephone wires.

HOUSE BILL No. 249, introduced by Mr. Walsh, February 7, 1907, provides that telephone companies shall pay a tax of $1 on every pole outside the corporate limits of a city and a $2 tax on every pole within the corporate limits of a city; also that whenever ten per cent. of the householders of any street, avenue or thoroughfare shall file a petition for the removal of a pole the officers of the city may cause the pole to be removed in the same manner as any other public nuisance may be removed.

HOUSE BILL No. 479, introduced by Mr. Lantz, February 27, 1907, and referred to Committee on Corporations, provides that all telephones shall be held to be common carriers, and that physical connection between all lines shall be obligatory, and that such connection shall be permitted by any telephone company upon receipt of five days' notice in writing from any person or corporation operating a line and desiring to connect in this manner. There is also a rate limiting provision in this measure, which states that no charge shall exceed 25 cents for a message to a point within fifty miles of the place of its origin, with an additional charge of one-half cent per mile for distances in excess of fifty miles for a five minutes' talk. Provisions are made for a division of earnings in case of interchanged service, also a rate-limiting clause applying to business and residential lines,

*Continued from the issue of April 13.

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and a section requiring the use of the latest improved long distance telephones on all instruments.

HOUSE BILL No. 686, introduced by Mr. Geshkewich, March 13, 1907, and referred to Committee on Municipal Corporations, provides that telephone and other wire-using companies shall place all new wires under the surface of the streets, alleys and avenues in cities having a population of fifty thousand inhabitants or over, and that existing overhead wires shall be placed underground before the 1st of July, 1909.

INDIANA.

HOUSE BILL No. 198. This act provides that if any telephone company shall rebate any portion of the regular rate fixed by its contract or franchise such rebate shall be considered an admission that the maximum price fixed in the contract is unlawful and excessive, and shall operate as a consent to the reduction from the maximum price to the price fixed by the abatement, and that thereafter all customers shall be allowed similar rates for the same class of service.

KANSAS.

SENATE BILL No. 200, introduced by Senator Smith, is a bill providing that telephone companies shall refuse the use of their wires to a news agency which discriminates against any newspaper in the State.

SENATE BILL No. 235, introduced by Senator Blaker, makes it a misdemeanor to wilfully injure, molest or destroy any of the outside equipment of a telephone company.

HOUSE BILL No. 161, introduced by Mr. Davis, provides that every railway company shall, in each of its stations, before the 1st of July, install and maintain a telephone connected with each and every central office in the city, town or village lying nearest its station.

SENATE BILL No. 236, introduced by Senator Stewart, is an Act to authorize cities of the first, second and third classes to purchase, extend, maintain and operate, or to construct, extend, maintain and operate a telephone system or other public utilities. Such action may be taken as a result of a favorable majority vote at a special election held on petition of ten per cent. of the electors of the city.

MINNESOTA.

SENATE BILL No. 334, introduced by Senator Nelson, is a compulsory physical connection measure applying to two telephone companies having lines between two or more villages or cities, and having toll stations in such villages or cities.

MISSOURI.

HOUSE BILL No. 122, introduced by Mr. Gannaway, is an act to amend section 1255 of article 6 of chapter 12 of the Revised Statutes of Missouri, 1899. This act relates to the duty of all telegraph and telephone companies to provide facilities at their offices for the despatch of public business and to use proper care in the forwarding of messages.

NORTH DAKOTA.

SENATE BILL No. 23, introduced by Mr. Young, makes it illegal for any telephone company to give franking privileges to any persons, or to offer to any individual rates lower than those granted to the general public.

PENNSYLVANIA.

HOUSE BILL No. 272, introduced by Mr. Bliss, March 4, 1907, is an act authorizing cities and boroughs to impose license fees for the erection and maintenance of poles, and prescribes the amount of such license fees.

HOUSE BILL No. 77, introduced by Mr. W. S. Reynolds, January 14, 1907, requires that telephone companies entering upon or occupying any public street or highway shall first obtain the consent of any borough in which such wires are to be placed.

HOUSE BILL No. 306, introduced by Mr. McCullagh, January 28, 1907, and referred to Committee on Municipal Corporations, provides that municipal corporations in incorporated cities and boroughs shall have power to regulate by ordinance the service and tolls, and prescribe rates to be charged by telephone companies.

SOUTH CAROLINA.

SENATE BILL No. 306, introduced February 1, 1907, provides that all railroad and express companies shall be required to keep and maintain a telephone in each and every office located in a city or town having a telephone exchange.

SENATE BILL No. 587, introduced February 9, 1907, is an act intended to give the Railroad Commission jurisdiction over all telephone lines of companies supplying telephone service.

TEXAS.

HOUSE BILL No. 24. This bill provides that telephone companies shall be regulated by law as common carriers, and shall be compelled to provide means whereby all messages received by any company may be transferred to the lines of competing companies operating in the same district, or operating long distance lines. It is provided that the receipts for messages thus traversing the lines of one or more companies shall be divided in proportion to the mileage owned by the several companies. Appended to the printed copy of this bill is a protest against its passage from the owners of many Independent telephone lines in the State of Texas, signed by the officers of the Texas Independent Telephone Association.

WISCONSIN.

SENATE BILL No. 518, introduced by Committee on State Affairs, March 12, 1907, and referred to Committee on Transportation, provides that every telephone company operating a telephone exchange where long distance messages may be received shall maintain in its office a telephone of each company operating a telephone exchange in the same city, and shall notify any person, no matter to what system he may subscribe, when he is wanted on a long distance line.

RATE JUGGLING IN CANADIAN RURAL DISTRICTS.

INDEPENDENT companies operating in York and Ontario Counties, Ontario, Can., are meeting with generous support from farmers, to whom they are giving adequate opportunities to obtain telephone service at a reasonable price. The Bell company, which has during the years of its monopoly been unable to give service to these people at rates which they could afford to pay, has suddenly made a new discovery.

Near the town of Pickering it is reported that town connections have been offered to rural lines owners at a rate of $3 a year, much lower than any concessions which have ever been offered when there was no competition. Rates in other places are lowered, if there is competition—otherwise not. The Canadian people are, however, thoroughly alive to the significance of these movements, and are refusing to patronize the monopoly when rates are cut simply as a temporary measure to destroy a small competitor.

MANY KENTUCKY TELEPHONE MEN MEET AT PADUCAH.

(*Continued from page 252.*)

service outside of their particular county. His talk was very highly appreciated by all present and extremely interesting.

Mr. R. A. McCurdy, general manager of the Mayfield Home Telephone Company, gave a very interesting report on Graves County.

Messrs. J. L. Travis and W. B. Butler made a complete report on Marion. These gentlemen, together with their associates, have for some time been devoting all their energy to this particular territory, consequently their company is operating 370 subscribers and the Cumberland 6.

Mr. M. H. Story, general manager of Salem Exchange, talked very freely on the subject of rural lines and the most practical way to handle them.

Mr. J. C. Ramage, general manager of the Providence Home Telephone Company, told of the conditions existing at Providence. The Cumberland Telephone Company has for one week been closed down and many of the people are very much surprised to know they can reach almost any place they desire over the Providence Home Telephone Company's lines, which connect with long distance lines of the Central Home Telephone Company.

Mr. W. G. Turpin, general manager of the Henderson Home Telephone Company and secretary of the district, made an extensive talk on conditions in Henderson, Davies and Hancock Counties. Mr. Turpin's report was very encouraging, showing that conditions have improved very materially since the last meeting.

Reports which came in from all portions of the district indicated results satisfactory to the most optimistic, showing the subscribers' lists ever on the increase and toll business constantly growing; while on the other hand the business of the Bell company is practically at a standstill. Active preparations for an increased toll business, which will insure still greater prosperity, are being made by many of the companies.

Mr. F. G. Hoge, president, made the closing speech, giving a complete report of Christian and Todd Counties, and discussed the Independent telephone movement in general. He was elected delegate to the State convention at Louisville, April 16th. After a general vote of thanks to Mr. Jeffreys and the Paducah Home Telephone Company for their hospitality in entertaining the association, the meeting adjourned until called by the president.

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IN THE OPERATING FIELD

TENNESSEE LEGISLATURE OPPOSED TO PHYSICAL CONNECTION BETWEEN COMPETING TELEPHONE COMPANIES.

THE Tennessee State Senate refused to endorse the physical connection bill which had been passed by the House of Representatives and the bill is now dead. The bill provided that all telephone companies be required to arrange physical connection with all other companies when the lines met at any point, so that patrons of one company could call a party on any other line. The bill was meant to force the long distance companies to give the rural lines the benefit of the toll service. The long distance companies objected on the ground that it would destroy their local business in the points where such connection should be made, and local companies because it would hinder development.

NEW BELL EFFORTS TO OBTAIN CONTROL OF TOLL BUSINESS IN INDIANA REPELLED.

WIDE publicity has recently been given, in the newspapers of Indiana, to an alleged attempt of the Central Union (Bell) Company to induce Independent exchange operators to handle Bell toll business, in consideration of the Bell Company giving up its local exchanges. In line with this policy it is reported that efforts are being made to discredit the efforts of the Independents who are making arrangements for an extended toll service of their own. Reports of the prospective sale of Independent plants which will be important toll centers have been circulated. Among those mentioned is the Home Telephone Company, of South Bend. That there is no truth in such reports is shown by the following letter from Theodore Thorward, president of the company:

"In answer to your letter in regard to the newspaper reports concerning the alleged attempts of the Bell Telephone Company to buy up the Independent exchange at South Bend, I wish to state that there is no truth in the matter whatever. The fact is, that the Bell Telephone Company, or rather Central Union Company, is very desirous of getting out of the exchange business in the State of Indiana, and is trying to make some kind of an arrangement whereby the Independent companies should take care of its toll line business in this State. In this arrangement it suggests that the Independent people should retain their own toll line business and only use the Bell long distance lines to points they can not reach on Independent lines.

"Its proposition has been very flattering, but I doubt whether the Independent companies will be willing to have anything to do with the matter.

"As far as the South Bend plant is concerned, the Bell Telephone Company will never be able to get control of it as long as the present stockholders retain their holdings in the company. The company as now constituted is very closely identified with Chicago Independent (Automatic) Telephone interests and they could not afford under any circumstances to tie up with the Bell in any way whatever.

"(Signed) THEODORE THORWARD, *President.*"

INDIANA TELEPHONE MEN MEET IN SEVENTH DISTRICT.

THE third meeting of the members of the 7th District of the Indiana Independent Telephone Association was held in Indianapolis April 10. It was the best attended meeting in the history of the district organization, and in enthusiasm has not been surpassed by any district meeting previously held. Each of the twenty-one companies in the district was represented.

President W. W. Mendenhall called for the report from members of the several companies present and this brought out news of a most encouraging condition.

Reports were read by Virgil Buntin, manager Lebanon Telephone Company; C. G. White, Arcadia Telephone Company; E. Hawkins, secretary of the Home Telephone Company, Noblesville, stating that in his city the Bell Company has only about 25 instruments to compare with about 700 operated by the Independent Company; J. J. Browne, secretary of the Consolidated Telephone Company, Danville; F. R. Strickler, secretary Franklin Telephone Company; George C. Hitt, secretary of the Indianapolis Telephone Company, reporting great improvements in respect to service during the past year; J. E. Newman, secretary Morgantown Telephone Company; O. P. Macey, manager Mooresville Telephone Company; Marvin Jessup, secretary of the Deming Telephone Company; C. M. Drake, manager of the Lewis Creek Telephone Company; C. B. Jones, of the Central Indiana Telephone Company; John W. Pyle, president of the Marietta Telephone Company; John Gant, treasurer of the Flat Rock Telephone Company; A. J. Newsom, president of the West Newton Telephone Company; J. M. Sandy, secretary of the Advance Telephone Co.; W. H. Ensminger, president of the Blue Ridge Telephone Co.; C. E. Wicker, of the Ripley Farmers' Telephone Company, and others reported progress, and described many improvements installed or to be installed and in every instance a satisfactory increase in the number of patrons. Several reported futile attempts made by the Bell Company to secure franchises, but these were repulsed even after free service for a year had in many cases been offered.

Twenty-eight members were elected as delegates to the annual meeting in May and W. W. Mendenhall was elected as the delegate to the International Convention to be held in Chicago in June. The election of officers resulted as follows: W. W. Mendenhall, Westfield, president; A. J. Newsom, West Newton, secretary-treasurer.

Charles S. Norton, secretary of the State Association, gave a brief talk about the annual meeting to be held in Indianapolis May 15, 16 and 17. Mr. Norton predicts that this will be the greatest telephone convention ever held outside of a national convention.

TEN THOUSAND MUNICIPAL TELEPHONES TO BE INSTALLED BY CITY OF WINNIPEG.

REVERSES have been coming thick and fast to the Bell Telephone Company in Canada during the past three months. First the electors of Manitoba voted in favor of government ownership of long-distance telephone lines, with municipal control of local exchanges; then dozens of towns and municipalities began preparing estimates of the cost of municipal systems, and the government of the province has called for tenders for poles and is preparing orders for materials sufficient for the building of 1,000 miles of long-distance lines as early as possible in the spring.

Last week, however, the climax was reached, when the Winnipeg city council, at a special meeting called for the purpose of discussing the telephone question, decided unanimously to ask the provincial government to construct a system in Winnipeg, the capital of the province, during the coming summer. The government was approached on the matter, and the special committee appointed to look after the matter received the assurance of Hon. J. H. Howden, minister of railways and telephones, that his government would construct such a system this summer and assume all liability for it, and at the same time would receive any profits which might be made from such a system. Winnipeg will require some 10,000 telephones, and it is understood

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that the government will put the subscription price at the lowest possible figure to make the system self-supporting. Francis Dagger, provincial telephone expert, is now preparing figures for this system, and it is expected active construction will be commenced this spring.

BELL-U. S. INDEPENDENT MERGER BLOCKED.

SUMMONS and complaint have been served by Attorney-General Jackson of the State of New York on the American Telephone & Telegraph Company and various interests allied with it and on the directors of the U. S. Independent Telephone Co. of Rochester and their associates, pending the action to prevent a consummation of an attempted merger of the Independent company with the Bell organization. This action is supplementary to a temporary measure taken last February, and is due to evidence obtained at the hearings before Referee Joseph A. Lawson, where the testimony given by President Fish of the A., T. & T. Co., and other persons convinced the Attorney-General that the proposed merger was contrary to the interests of the people of the State of New York and in violation of the Donnelly anti-trust law in that it would constitute a monopoly in the telephone business in certain sections.

Pending the action which the Attorney-General is to bring in the courts, Justice Betts, of the Supreme Court at Albany, has issued an injunction restraining all the defendants mentioned from making any attempt to complete the transfer of the property of the U. S. Independent Co. or doing anything to promote any merger of this company with the American Tel. & Tel. Company.

HOW TO MAKE YOUR TELEPHONE DOUBLE ITS VALUE TO YOU.

It will cost you three or four cents a day more, but—Well, just look at this list:

It will save every bit of the stair climbing, up and down, and down and up again, that your telephone makes you do now.

It will put the doctor's voice at your ear in bed, day or night, at a moment's call.

It will put the police station and its resources within your elbow reach all night long.

It will give you a direct alarm wire from your bedroom to the fire department, and bring the department in all the hurry possible if you discover your house on fire, and are cut off from the first floor, perhaps.

It will allow your wife and the household to talk from one floor to the other without calling or stair climbing.

And what is this thing that can accomplish so many modern Aladdin's lamp wonders?

Just an extension to your telephone that you can have put in before a few more days are over, if you call up Main 294.

Do it now.

HOME TELEPHONE COMPANY.

An Example of Successful Newspaper Advertising Copy.

THAT NUMBER QUESTION AGAIN!

"NUMBER, please?" The dulcet tones of the invincible "hello" girl trilled the query into the waiting ear of the wag at the other end of the circuit.

"Give me two pairs of aces," came the answer.

"Do you think you're playing draw poker?" interrogated the girl at "Central."

"Certainly not," was the reply. "I'm calling a telephone number. Kindly let me have four ones."

"I'm afraid I don't understand," said the operator. "Can't you make your call clearer?"

"I'm doing the best I know how. Can you connect me with one, one, one, one?"

"Guess you've got the wrong number; try again."

"No, I haven't; it's in the book. Maybe you specify it as eleven eleven."

"Say, do you think this is a policy shop? What number are you calling?"

"I'm trying to tell you. See if you can give me one hundred, eleven, one."

"No, I can't," came the sharp reply. "I have no time to wait. If you cannot be more explicit you had better send a telegram."

"Why do you have such nonsensical numbers in your old books if you can't understand them?" argued the caller. "Here it is as plain as day—four ones in succession."

"Oh, you mean one, one, double one. Why didn't you say so? I'll connect you."

"Don't bother; I just wanted to discover how you called for that strange collection of figures. Good-bye."—*Exchange.*

CHICAGO SPECIAL COMMISSION OF TELEPHONE EXPERTS MAKES REPORT.

AFTER investigating as carefully as was possible in the time at their disposal, the expert commission, composed of Prof. Dugald C. Jackson, William H. Crumb and George W. Wilder, secretary, has made its report on telephone conditions in Chicago. This report is practically confined to the following four questions which alone were included in the instructions issued to the commission:

1. The feasibility of the proposed project of the Manufacturers' Telephone Company;
2. Relative merits of flat rate and measured rate telephone service;
3. The application for a franchise made by the Chicago Telephone Company;
4. The advisability of requiring universal toll connections by ordinance.

The project of the Manufacturers' Telephone Company has not been approved, principally on the ground that the time required for the construction of an adequate plant would be twice that which is allowable under present conditions and objections are also raised to the estimates presented by the company which were termed inadequate, and to the methods of charging and rates proposed. It is stated that the latter are not high enough to permit of the company's giving an adequate service and making a profit.

The institution of measured rates for business service is recommended particularly for the reasons that it is believed to give each user a just proportion of the entire expense of carrying on the telephone service and that measured rates will lower the number of useless messages which at the present time have been found to form an extremely large per cent. of the load of the exchanges of the Chicago Telephone Co., and cause countless annoyances owing to the frequency of "busy" reports, etc. The commission has found that the useless calls now account for approximately one-third of the total amount of the Chicago Telephone Company's operating expense and the elimination of this waste should make practical a general reduction in rates. Reasons are given why the limited use of flat rates in connection with residence and neighborhood exchange telephones may be advisable.

The methods of accounting used by the Chicago Telephone Co. are condemned in that they do not give any means of determining the absolute or relative costs of the different classes of service and it is recommended that in case the Chicago Telephone Co. be given a franchise it shall be compelled to start a separate set of records, so arranged as to afford data for determining the average cost of the several classes of service; these books to be accessible and kept under supervision of the city comptroller.

The report strongly condemns the idea of requiring an operating company to make connections with every applicant company. A large number of charts and estimate tables bringing out points in connection with the local situation, which have a valuable bearing in relation to the text, are included in the report.

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TELEPHONE PATENTS

SELECTIVE TELEPHONE SYSTEM.

Harold Jackson Fisher, Hotchkiss, Col., patents (No. 847,283; dated March 12, 1907; filed August 26, 1906; serial No. 332,044) and assigns one-half to George H. Duke, Hotchkiss, Col., a selective telephone system.

This invention covers a selective telephone system employing ratchet wheels at the various stations, controlled by the operator at the central office by means of the associated polarized electromagnets. When the operator is called by a subscriber by the actuation of her drop, owing to the passage of current over the line from the generator at the subscriber's station, she answers, and after making the required connection depresses a key the required number of times to effect the desired changes at the called station, by the operation of a ratchet on the step by step principle over a circuit containing battery at the central office. This connects bell and talking circuits so that the desired subscriber may be rung and hold conversation.

METAL TUBE POLE.

Louis Blessing, Jackson, Michigan, patents (No. 846,001, dated March 5, 1907; filed December 30, 1906; serial No. 293,929) a metal truss telegraph pole.

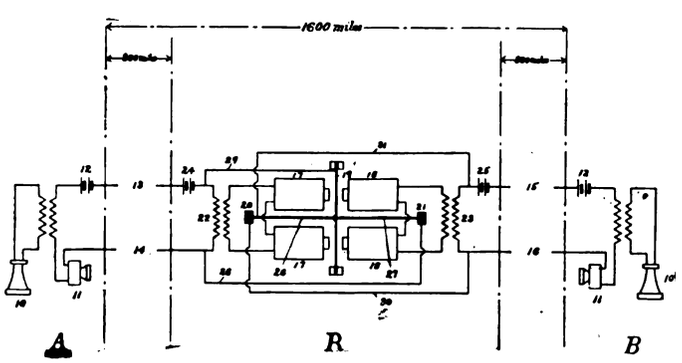
This invention covers a form of pole made of hollow metal tubes, reinforced by a zigzag truss work of steel wire.

TELEPHONE REPEATER.

Dilpert S. Dickert, Salt Lake City, Utah, patents (No. 847,656, dated March 19, 1907; filed May 22, 1906; serial No. 318,152) a telephone relay.

This patent covers a form of telephone relay or repeater. The toll line is cut in two and across the terminals of each side are bridged the primary sides of induction coils 22 and 23 in series with the local battery 12. The incoming current variatons are intended. to set up an induced current of greater intensity in the magnets 17 or 18, according to the station talking, which acts upon the common diaphragms 19, causing a corresponding movement of the bar 26, 27 and disturbing the granular carbon of the buttons 20, 21, thus varying the resistance.

The inventor states that in providing a common diaphragm

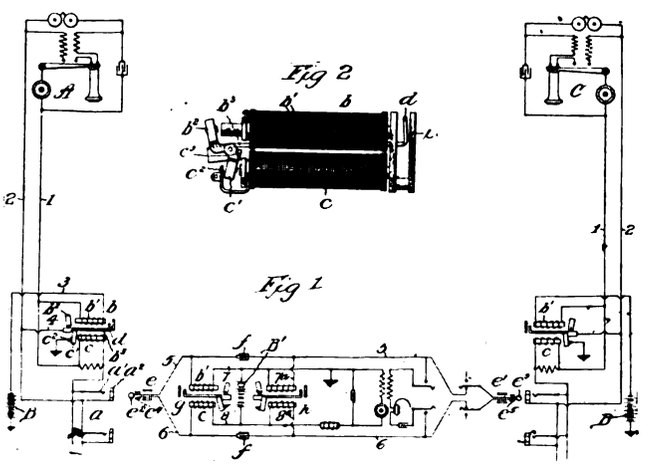


between the two sets of magnets the objectionable effect of repeating back to the sending station and the consequent confusion of vibrations is avoided. He also states that this does not occur as the primary coil becomes partly short circuited by the transmitter circuit, thus weakening the magnets and releasing the diaphragm, and thereby the attached contact rod, thus increasing the contact resistance of the transmitter buttons. In addition to this, as the diaphragm moves in either direction it decreases the resistance in one button, at the same time increasing the resistance in the other.

SIGNALING SYSTEM.

Frank R. McBerty, Evanston, Ill., patents (No. 849,336; dated April 2, 1907; filed July 11, 1902; serial No. 115,131; divided and this application filed January 20, 1905; serial No. 241,962) a signaling system for a telephone line.

This patent covers a line circuit using a special form of mag-



netic signal, shown in Fig. 2, and the use of a similar signal for supervision in a cord circuit. When the magnet b^1 is energized armature b^2, which normally overbalances the indicator and its rod b^3, is attracted, causing target d to be displayed through an opening in the face plate. Magnet c, when energized, attracts armature c^1, which by its movement moves the indicator to its concealed position. When telephone A is removed from the hook the associated line-signal is displayed, wire 4 and grounded contact c^2 being used to complete the circuit through magnet b^1.

When the operator answers current flows from the positive pole of battery B^1 through indicator displaying coil b^1 of supervisory signal and restoring magnet c of the line signal, being completed through the substation and restoring coil c of supervistory signal. The breaking of contact c^1 c^2 puts a test potential from battery B^1 on the thimbles of multiple jacks. The line signal is now held in the non-indicating position by current from battery B through both windings of the line signal to ground in the cord circuit, this circuit being independent of the telephone hook contact. When a telephone is replaced on the hook a circuit through supervisory magnet c is broken, but b^1 is still energized by current from battery B to the cord circuit ground, causing the display of the supervisory signal.

AUTOMATIC EXCHANGE-SELECTOR.

John G. Roberts, Chicago, Ill., patents (No. 848,398; dated March 26, 1907; filed June 18, 1906; serial No. 322,145) and assigns to Western Electric Company, Chicago, Ill., an automatic exchange selector.

This patent describes a selector for the central station whereby any subscriber may automatically connect his telephone with the line desired. The selectors, of which there is one for each line entering the exchange, comprise a combination of three relays,

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THE DEADLY PARALLEL

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With GRAY PAY STATIONS you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

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For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WANTED—Competent cable splicer. Position permanent. Send references. Address, Zenith Telephone Co., Duluth, Minn. 809

WANTED---Continued

SITUATION wanted by first-class man as manager of exchange or territory, 5 years experience with Bell, and can show results. Advise particulars and salary. Address, Box 813, care American Telephone Journal, 100 William St., New York. 813

WANTED.—Manager of common battery exchange, experienced in all lines of the telephone business, wishes to locate in town of 5,000 to 10,000. Age 26, married, good education, strictly temperate and competent. Address Box 814, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 814

WANTED.—Chief operator for an exchange of 1,400 in a good Ohio town, population 10,000. Want a competent party, one who can manage service, monitor, and supervise operators, arrange hours and take entire charge of operating room. Good wages to one who can get results. Address Box 815, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 815

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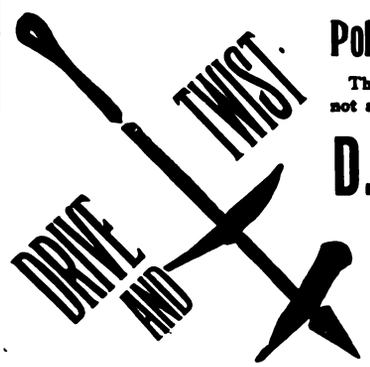

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Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
Form G-90-H.	One subscriber to a sheet; carries account 12 years.
Form G-90-I.	For Small Exchanges; Bound Books; carry 12 subscribers on a page for 1 year.

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TELEPHONE SYSTEMATIZING DEPT.

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cog-wheels, retaining pawls and a rotating shaft upon which is mounted a pair of springs for each line that may be selected. These springs constitute wiping contacts and are mounted on the shaft in spiral formation so that they may engage with multiple terminals arranged in an arc-shaped field only when the shaft has rotated the desired distance. The inventor does not show the device in the subscriber's instrument that must be used to cause an actuation of this selector.

TELEPHONE TRANSMITTER.

James Michael Dempsey, Chicago, Ill., patents (No. 845,062; dated Feb. 26, 1907; filed November 30, 1906; serial No. 345,718) and assigns three-tenths to William B. Beckman, Fayetteville, Arkansas, and three-tenths to Harry T. Rogers and one-tenth to Madeline Dempsey, both of Chicago, Ill., a telephone transmitter.

The inventor describes a telephone transmitter in which the motion of the sound-receiving diaphragm is multiplied by means of a system of levers which impart the augmented vibrations to one electrode of the resistance chamber. This chamber has a rigidly supported rear electrode. Means are also provided whereby the granular carbon may be stirred occasionally by a hand-actuated churning arrangement, so as to prevent packing.

WATCH CASE RECEIVER MAGNETS.

Aaron E. Harrison, New York, N. Y., and Crowell M. Haslett, Jersey City, N. J., patent (No. 845,546; dated February 26, 1907; filed September 9, 1905; serial No. 277,668) a telephone magnet.

This patent covers a form of watch case receiver magnet, consisting of several semi-circular, permanent magnets laid up to form a circle with like poles adjacent. To them are attached, at the poles, pole pieces extending upward obliquely, and upon these are wound the electro magnet coils.

The inventors claim for this magnet a greater number of lines of magnetic flux confined within a given area than may otherwise be obtained, giving a receiver that is sensitive to a greater degree than is usual, and one particularly adapted to wireless telegraph receiving.

AUTOMATIC TELEPHONE SELECTOR.

August Alvin Monson, Minneapolis, Minn., patents (No. 847,355, dated March 19, 1907; filed March 31, 1906; serial No. 309,201) signaling apparatus for telephones. This invention relates to a selector which may be set at the number of the station desired, and then returned to the zero position by hand. On its return the proper number of impulses are sent out by making and breaking the switch-controlling circuit.

TELEPHONE CALL-RECORDER.

Richard W. Shoemaker, Pasadena, Cal., patents (No. 840,718; dated Jan. 8, 1907; filed Feb. 13, 1905; serial No. 245,381) and assigns fifty-five one-hundredths to Reginald H. Shoemaker, Jr., Pasadena, Cal., a visual recorder for telephone systems.

This patent covers a device located at the subscriber's telephone and so connected with it that it may be operated by the central office operator, in event of a call being made for the subscriber during his absence. The device comprises six relays variously connected to operate, with current furnished from the central office, a disc having on its periphery letters or figures by means of which the number of a person calling the absent subscriber may be printed upon a paper tape.

AUTOMATIC COIN COLLECTOR.

Edwin H. Smythe, Chicago, Ill., patents (No. 846,628, dated March 12, 1907; filed December 21, 1905; serial No. 292,770) patents and assigns to the Western Electric Company, Chicago, Ill., an automatic coin collector system.

This invention has to do with a system whereby the calling subscriber deposits a coin in order to secure the attention of the operator, the coin being automatically returned to the calling subscriber should he be unable to signal the central office.

The inventor describes the system as one in which the coin is under the control of the operator after connection has been made with the calling subscriber in order that the coin may be returned in event of not being able to secure the desired connection, and in which the coin is automatically deposited in the coin receptacle upon the taking down of the connecting cords by the operator.

PARTY-LINE LOCK-OUT SYSTEM.

Herschel R. Turner, Hoxie, Kansas, patents (No. 842,822; dated Jan. 29, 1907; filed May 12, 1906; serial No. 316,578) a telephone system.

This patent covers a step-by-step selective system in which the selecting mechanism is operated by a relay actuated by the power obtained from the hand generator, the speed of which is controlled by a revolving governor. Upon reaching the proper point of selection the generator automatically ceases to actuate the relay and the current is utilized in ringing the bell of the called subscriber.

LINEMAN'S CHAIR.

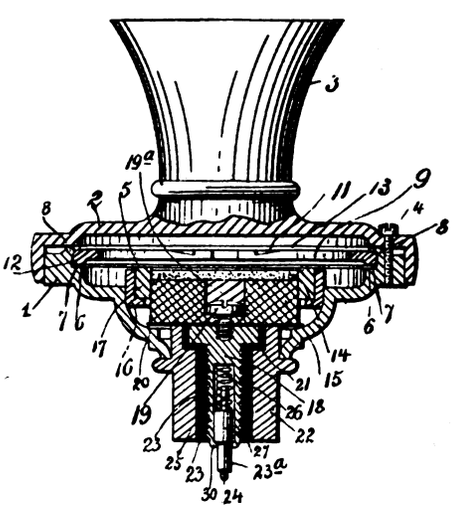
Geo. P. Yeakel and Wharton C. L. Ireland, Norristown, Pa., patent (No. 844,641; dated Feb. 19, 1907; filed Sept. 14, 1906; serial No. 334,693) and assign one-third to Charles Keller, Norristown, Pa., a lineman's chair.

This patent covers a form of lineman's car for riding a messenger wire, in which sprockets and chains are provided, together with a hand operated crank as a means of propulsion by causing the rotation of the wheel which rides on the messenger.

TRANSMITTER.

Alfred Larrsson, Buffalo, N. Y., patents (No. 840,069; dated January 1, 1907; filed January 23, 1906; serial No. 297,425) a telephone transmitter.

This patent covers a form of telephone transmitter in which the diaphragm is held firmly in place by means of the resilient



spring 9, which is inserted between the diaphragm 5 and the under surface of the annular groove 8.

Means are provided, also, for making contact with the back electrode by means of a spring 26, the connection to the front electrode being accomplished through the shell and diaphragm.

A tinfoil diaphragm is provided in front of the main diaphragm to exclude dust and moisture.

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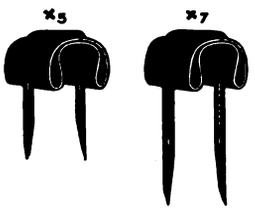

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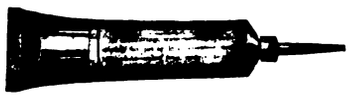

The last squeezed out of the tube as good as the first.

Can be carried in the pocket conveniently.

Get a sample.

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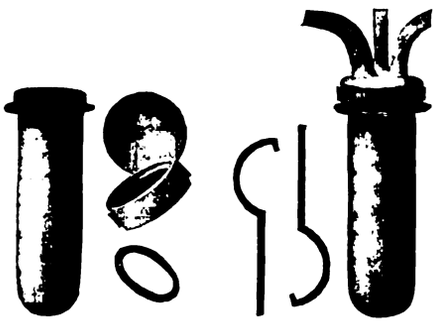
246 Summer St., Boston, Mass.



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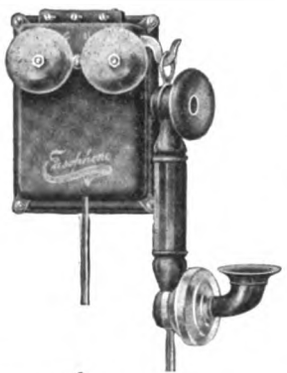

The Exchange Manager sees Lowest Maintenance Cost, Increase in Number of Subscribers, Demand for Hand Telephone.

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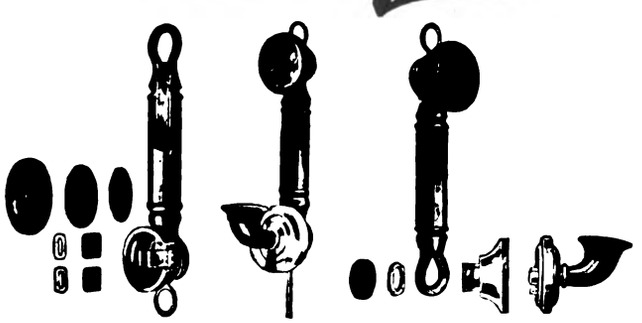
ROME, N.Y.



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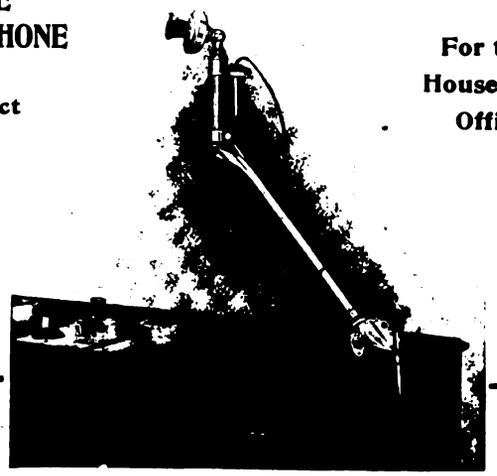
A Perfect Telephone

For the House and Office



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The Switch mechanism is perfect. All joints soldered excepting Platinum contact points. : :
Simplicity, Quality and Accessibility unequaled anywhere. : : : : : : : : : : : : : : :

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OLIVER MANUFACTURING CO., Philadelphia, Pa.
General Sales Agents for the Atlantic, Gulf and Western States and Foreign Countries.

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Send for illustrations of the finest Pedestal and Switch Mechanism ever made

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IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

RING BOLT DISTRIBUTION.

THERE are many places in cities and towns of moderate size where the most convenient and economical method of distribution is to run wires in twisted pairs along the face of a brick wall of a building, and take off individual pairs to windows, etc., wherever required. The method of fastening the wires is very important. The Peirce Specialty Company, Elkhart, Ind., recommends the ring bolt illustrated in Fig. 1 on this page, which is designed especially for this purpose.

It is a combination of a split bridle ring with a Peirce expansion bolt head, made of ¼-inch round steel, heavily galvanized. In order to fasten it in place a hole is drilled in the masonry, the bolt inserted, and the lead sleeve, which is at the back of the head, is driven or swaged back upon the wedge-shaped head. The sleeve is then compressed into every crevice of the masonry, giving exceptionally good holding power.

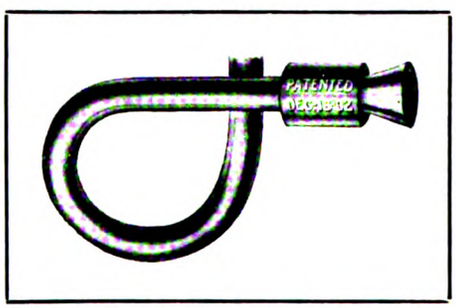

Fig. 1. Peirce distributing ring, for use on brick walls.

The appearance of a lead along a brick wall, using twisted pair wires run through the Peirce ring bolts, is shown in Fig. 2. The company manufactures a great variety of supplies for the distribution of telephone wires, and will send its catalogue describing them free of charge upon receipt of a request to any interested telephone man.

PETER F. HENSEL, of the Hensel Electric Construction Co., Chicago, Ill., has taken the Western agency for the line of telephone apparatus manufactured by the S. H. Couch Co., of Boston.

The installation of private systems in hotels and small installations of automatic systems are the specialties to which Mr. Hensel will devote his attention and in this connection he feels that the line of equipment manufactured by the S. H. Couch Co. will fill a long felt want and be most admirably adapted for this class of work.

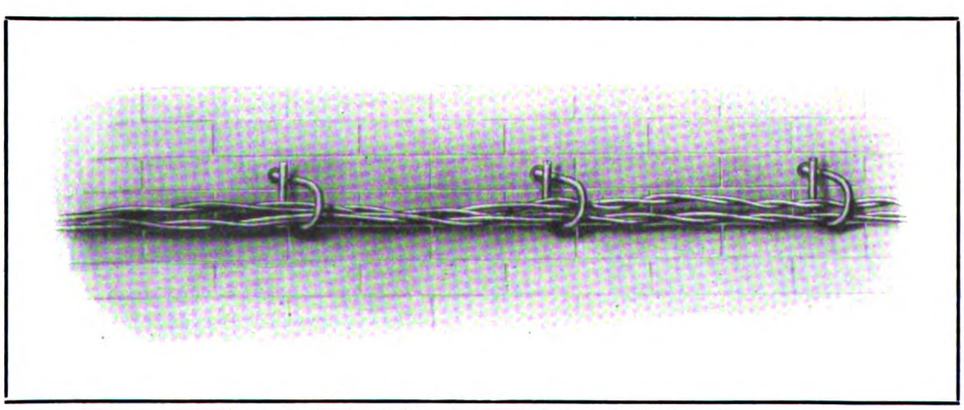

Fig. 2. Twisted pair laterals, run in Peirce distributing rings.

Mr. Hensel, who has had twelve years' experience in intercommunicating telephone construction and installation, will open an office at 324 Dearborn st., where he will carry a complete stock of standard telephone supplies for interior systems, and where he will be pleased to meet any one interested in this line of work.

EWING-MERKLE ELECTRIC CO., 1106 Pine St., St. Louis, Mo., publish in the latest issue of *Everbest Magazine* a discussion of instruments which may be used to call either the central office or the remaining stations on a party line. All that is necessary for the equipment of existing systems for this type of selective service is to insert a push button in the instrument circuit in the manner shown in the article. A copy of the book will be sent to any person who operates rural lines on receipt of a request.

WESCO SUPPLY COMPANY, St. Louis, Mo., has just issued a new Bulletin, No. 75, which tells about some of the products of the company's new telephone factory. The Bulletin covers a complete list of magneto telephones and switchboards as well as prices on materials and supplies for telephone line construction. The company draws especial attention to the high standard of quality it maintains in the construction of all its apparatus, as well as to its prices. Copies of the bulletin will be sent free on receipt of a request.

MR. A. J. KENNEDY, who has been with the Stromberg-Carlson Telephone Manufacturing Co., of Rochester, N. Y., for a number of years, in its engineering and later in the sales department, has associated himself with The Wire & Telephone Company of America, as travelling representative of this company's sales department. Mr. Kennedy has a broad acquaintance in the telephone field, and will no doubt be no small factor in developing the sale of this company's already rapidly increasing business.

THE DEAN ELECTRIC COMPANY will soon ship the new Erie, Pennsylvania, switchboard from its factory at Elyria, Ohio. This common battery multiple, 6,000 capacity board, is one of the best that has ever been put out by the Dean Company.

The new equipment replaces the old Paca-Miller system, in which the board proper consists of multiple jacks only, the drops being on the wall above and in the rear of the board.

Two thousand, three hundred and eighty lines are equipped and ready for service, also forty magneto lines for rural service. This shipment includes a three-position chief operator's desk and a three-position wire chief's desk, both being provided with space in the center for card indexes. The main and intermediate frame and relay rack, also complete power plant, except the battery, are all furnished and will also be installed by the Dean people.

A standard Dean four-party harmonic outfit in duplicate for ringing goes forward with the new board. The Erie board is equipped with the Dean line and cord test on every position for testing lines and cords.

AMERICAN CONDUIT CO., New York, Chicago, and Los Angeles, Cal., has just prepared bulletin No. 221 in the shape of instructions for cement testing, printed in concise form upon a postal card. Telephone managers and superintendents of construction, may have this card free of charge by writing to the company.

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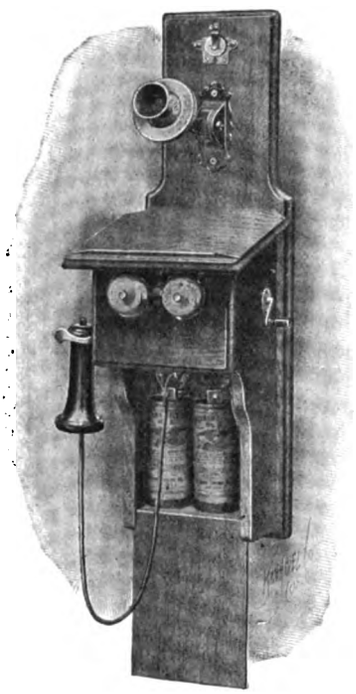
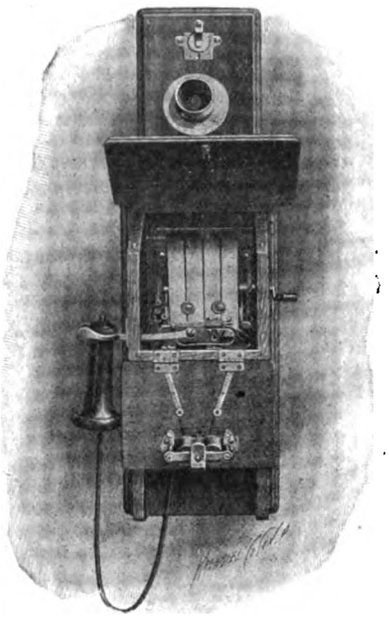
COMMON BATTERY TYPE CABINET MAGNETO PHONES

Sumter Standard Parts—with a few useful features the other fellow hasn't got yet



GET BULLETIN 141



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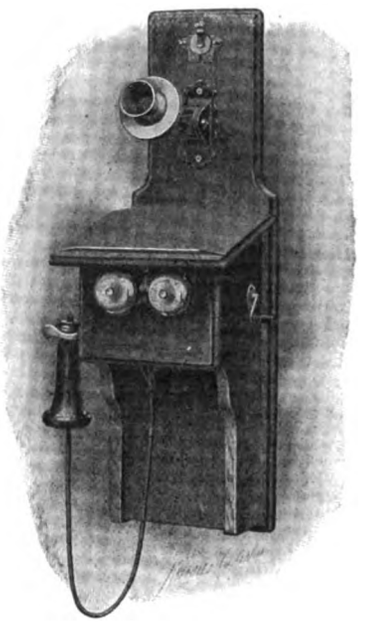
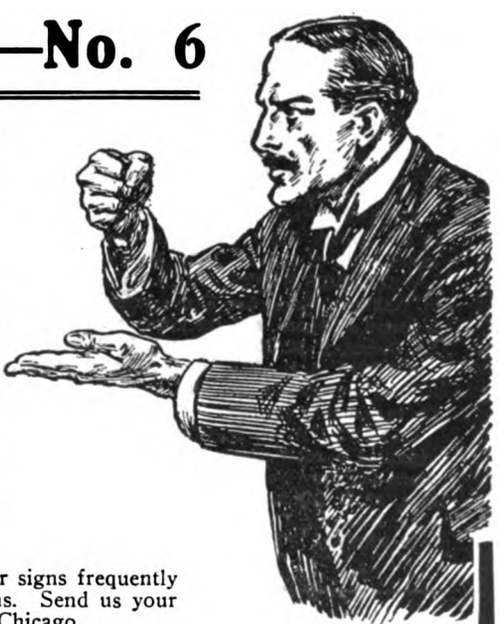


1907 MODEL

THE SUMTER TELEPHONE MFG. CO. ... SUMTER, S. C.

Talks With The Buyer—No. 6



I want to digress from my "Talks" on our telephone apparatus and its particular adaptability to your requirements long enough to call your attention to another of our special price offerings.

We had designed and made for us a very large number of especially attractive

New Pay Station Signs

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The signs on which I am quoting must not be confused with the cheaper signs frequently offered the telephone trade. This is the time of year to put out your signs. Send us your orders for immediate shipment. Delivery F. O. B. St. Louis, Dallas or Chicago.

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NEW COMPANIES.

MORELAND, ARK.—An Independent telephone company has been organized at Moreland, and the following officers elected: U. Hudlow, president; R. H. Vaughn, vice-president; T. B. Ludwick, secretary; F. N. Duvall, treasurer.

BROOKVILLE, IND.—The Brookville-St. Peters Telephone Company has been incorporated with a capital stock of $10,000. It is its intention to build a telephone plant in Brookville and throughout Franklin County. I. D. Garrignes, Charles Kretch, F. A. Wright and R. H. Cook are among the directors.

OLDS, IA.—Articles of incorporation have been filed by the Mutual Telephone Company, of Olds. The capital stock is placed at $14,000, divided into 400 shares of $35 each. The directors of the new company are Everett Swanson, Thos. Schooley, Henry Ingmanson, Chris. Miller, Elmer Hooper, Frank Young, Louis Eveland, C. H. Johnson, L. W. Canby, Peter Nicholaus and John Zickafoose.

SHELDAHL, IA.—The Sheldahl Telephone Company has filed articles of incorporation. It has an authorized capital stock of $6,000, and the incorporators are A. Frick and others.

CALEDONIA, MINN.—A farmers' telephone company, to be known as the Dandelion Telephone Company, has been organized by the farmers living north and northeast of Caledonia, and the following officers elected: Chas. Keucker, president; Daniel O'Leary, secretary, and Axel Anderson, treasurer.

JACKSON, MINN.—The Middletown Farmers' Telephone Company, of Jackson County, has been incorporated with a capital stock of $3,000. The incorporators are T. D. Sawyer, Geo. Withers and J. A. Sayles, of Jackson.

WELLSVILLE, N. Y.—Articles of incorporation have been filed by the Hanover Hill Mutual Telephone Company. It has a capital stock of $200, and the incorporators are Henry Hornburg, M. F. Vossler, Carl Schrader, Wellsville, N. Y., and others.

MINERAL CITY, O.—The Beggar's Run Telephone Company, with a capital stock of $3,000, has been incorporated by A. L. Boyd, Thomas Herrod, Nicholas Fulk, Ira Dilley, E. S. Dilley, John Stahlecher, L. H. Farber and A. L. Strawn.

RAINSBORO, O.—Articles of incorporation have been filed by the Rainsboro Home Telephone Company. It has an authorized capital stock of $10,000, and the incorporators are J. B. Upp and others.

BURLINGTON, OKLA.—The North Union Telephone Company has been incorporated with a capital stock of $10,500. The directors are Henry Welch, Wm. Alberding and Frank Veach, of Kiowa, Kas.; Jos. Fash, of Capron, Okla.; C. F. Keeler and Wm. Mahoney, of Drum, Okla.

KINGFISHER, OKLA.—Articles of incorporation have been filed by the Huntsville Telephone Company. The capital stock is named at $2,700, and the directors are M. B. Gillinan, E. M. Hale and Joseph Thomas.

BRINSMADE, N. D.—A farmers' telephone company is being organized at Brinsmade to construct a line into Normania township, where it will connect with the Normania-Ferry line. E. E. Haney has been made president of the company.

SHIRLEY, OKLA.—An Independent telephone company, to be known as the Shirley Rural Telephone Company, has been incorporated with a capital stock of $1,000. J. M. Brown and others are the incorporators.

WALLING'S STORE, OKLA.—The Whiskey Creek Telephone Company, of Walling's Store, has filed articles of incorporation. The capital stock is placed at $5,000, and the incorporators are C. M. Barnes, C. C. Hopper, Ed. Owens, J. M. Hooper and J. D. Moore, of Hastings.

SALUDA, S. C.—The Saluda Telephone Company has been organized, and it is its intention to establish an exchange at Saluda and build lines into the surrounding country.

CANASTOTA, S. D.—The farmers in the vicinity of Canastota have organized a rural telephone company to be known as the Farmers' Telephone Company No. 2, and the following officers have been elected: President, M. E. Mitchell; vice-president, Samuel Morrow; secretary, John Parsons; treasurer, Chas. Kostboth.

EVERMAN, TEXAS.—Articles of incorporation have been filed by the Everman Telephone Company. The capital stock is given at $5,000, and J. M. Scott is among the incorporators.

WEST, TEXAS.—The Home Telephone Company, of West, has been incorporated with a capital stock of $25,000. Among the incorporators are E. Rotan, J. B. Earle and others.

FERRYVILLE, WIS.— The Ferryville Telephone Company, with a capital stock of $1,000, has been incorporated by I. B. Hayden, F. E. Rutter, D. L. Rutter and others.

SHELL, WYO.—The Shell Telephone Company, with a capital stock of $1,500, has been incorporated at Shell, and it is its intention to construct a line to Greybull.

PINCHER CREEK, ALB., CAN.—An Independent telephone company is being formed at Pincher Creek, and application is being made for a franchise. Address S. W. Berry.

NEW GLASGOW, N. S., CAN.—An Independent telephone company has been organized at New Glasgow, and a charter procured. It is the company's intention to construct and operate a line from New Glasgow to Pictou.

LEITRIM, ONT., CAN.—An Independent telephone company has been formed to erect a telephone line from Leitrim to Billings' Bridge. Messrs. Kemp and Morris are among those interested in the enterprise.

POINTE AU PIC, QUEBEC, CAN.—La Campagnie de Telephone de Charlevoix et de Saguenay has been incorporated with a capital stock of $40,000. Its principal place of business will be at Saint Etienne de la Malbaie. Among the incorporators of the new company are Jean Warren, Charles Warren, Pointe au Pic, and L. A. Bouliane, St. Etienne de la Malbaie.

FRANCHISES.

CRETE, NEB.—The Independent Telephone Company, of Lincoln, has applied for a franchise in Crete.

NORTH YAKIMA, WASH.—Application for a telephone franchise at this city has been made by the Cowiche Telephone Company, of Cowiche.

RAINIER, WASH.—Permission to construct and operate a telephone line from Rainier to Yelm has been granted by the board of country commissioners to A. B. Smith, of Rainier.

FINANCIAL.

DAVIS, ILL.—The capital stock of the People's Mutual Telephone Company has been increased from $10,000 to $15,000.

MILLSTADT, ILL.—The West Side Telephone Company has increased its capital stock from $1,140 to $2,700.

MASON CITY, ILL.—The Mason City Telephone and Telegraph Company has increased its capital stock from $2,500 to $7,500.

RUTLAND, ILL.—At a recent meeting of the Central Illinois Independent Telephone Company it was decided to increase the capital stock from $30,000 to $75,000.

MAJENICA, IND.—The Majenica Telephone Company has increased its capital stock from $25,000 to $60,000.

GRAND RAPIDS, MICH.—The Citizens' Telephone Company at a recent meeting declared its thirty-ninth consecutive dividend of 2 per cent to the stockholders, payable April 20th.

SPEED, MO.—The capital stock of the Speed Telephone Company has been increased from $6,050 to $10,000.

BEATRICE, NEB.—The Barmeston Mutual Telephone Company has increased its capital stock to $7,000.

VALLEY CITY, N. D.—An 8 per cent dividend has been declared by the North Dakota Central Telephone Company.

LANCASTER, O.—The directors of the Buckeye Lake Home Telephone Company have passed a resolution to increase the capital stock from $10,000 to $30,000.

GUTHRIE, OKLA.—The capital stock of the Farmers' Mutual Telephone Company has been increased from $800 to $14,000.

COMBINATIONS.

ARKADELPHIA, ARK.—The Arkadelphia Telephone Company, recently

NEWS—WANTED

THE matter contained upon the message and Operating Field pages of this paper is contributed largely by our special correspondents. We believe, however, that there are many valuable items of telephonic interest which are never brought to the attention of the public. There is no reason why this condition should exist, and the Editor, therefore, invites all telephone companies and the officials of such companies, to furnish any information that they can consistently make public relative to financial statistics, new construction, elections, franchises and personal items.

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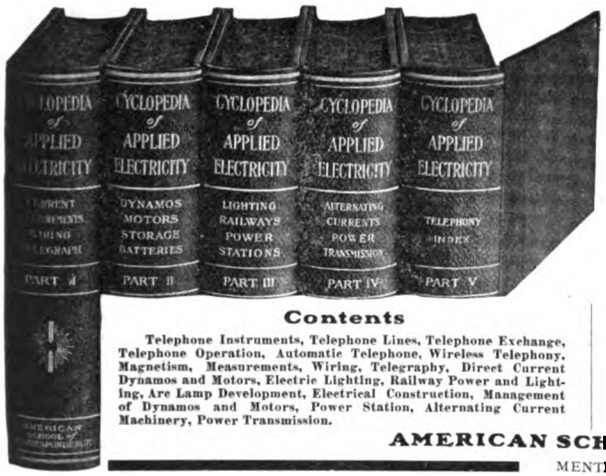

Contents

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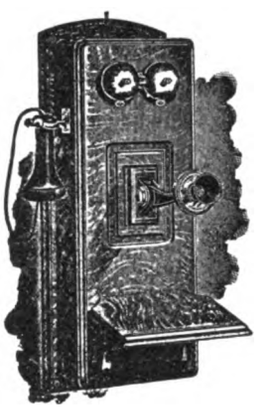

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THE WEEK'S MESSAGES

owned by H. J. Runyan, of Amity, has been acquired by Messrs. Fricby and Thrasher, of Malvern. They also own the Malvern plant.

ELECTIONS.

CORWITH, IA.—The Corwith Rural Telephone Company has elected the following officers: President, F. J. Oxley; vice-president, John Palmer; treasurer, E. L. Stilson; secretary, E. G. Gaskill.

DUDLEY, IA.—The following officers have been elected by the Dudley & Munterville Mutual Telephone Company; D. W. Baker, president; Charles E. Anderson, treasurer; Henry Burnstedt, secretary.

FORREST, ILL.—The Forrest Home Telephone Company has elected the following officers: President, George Leonard; vice-president, H. B. Watson; secretary and treasurer, Frank Rudd.

ROCK GROVE, ILL.—The following officers have been elected by the Rock Grove Farmers' Mutual Telephone Company: President, Lewis Rote; secretary, Wm. Fisher; treasurer, Martin Brobst.

NATOMA, KAN.—The officers of the Natoma Telephone Company are A. C. Daggett, president; T. C. Snodgrass, vice-president and treasurer, of Waldo.

CHARLOTTE, MICH.—The Eaton Telephone Company has elected the following officers: President, George Williams; vice president, Richard Bohn; secretary, J. Upright; manager, W. Reeves.

ELWELL, MICH.—The following officers have been named by the Elwell Telephone Company: President, W. C. Pugsley; vice president, E. B. Huff; secretary, Seely Amsbury; treasurer, Alton Wiley.

WAYNE, MICH.—At a recent meeting of the People's Telephone Company the following officers were named: President, Jos. Waltz, of Waltz; vice-president, E. C. Maxwell, Carleton; secretary, F. L. Edwards, Carleton.

EDGERTON, MINN.—At the annual meeting of the Enterprise Telephone Company, held at Edgerton, C. S. Howard was elected president; R. B. Hinkly, vice president; L. W. Lockwood, secretary; F. E. Douty, treasurer.

MANKATO, MINN.—The Mankato Citizens Telephone Company has elected the following officers: H. A. Patterson, president; N. Petersen, vice president; W. D. Willard, secretary-treasurer; W. A. Funk, attorney.

MORA, MO.—The Mora Telephone Company has named John M. Moss, president; T. W. Goodknight, vice-president; B. A. Dump, secretary; A. O'Farrell, treasurer.

HUMBOLDT, NEB.—The following directors have been elected by the Speiser Mutual Telephone Company: C. Lionberger, president; E. Uhri, Louis Stalder, Joseph Petrashek, John Holechek, Chas. Gunzenhauser, R. F. Conrad, secretary and treasurer.

NEBRASKA CITY, NEB.—The following officers have been elected by the Nebraska City Telephone Company: N. A. Duff, president; Henry Schwake, vice-president; A. M. Munn, secretary and treasurer; R. A. Duff, general manager.

WASHINGTON, PA.—The following directors have been elected by the Farmers' Mutual Telephone Company: J. C. C. Pease, R. L. Munce, R. G. Lutton, S. O. Black, R. B. Blaney, S. N. Hopper, H. A. Day, William Coursin, C. M. Linn, H. P. Monnelauer, J. R. McPherson, J. Willis Martin, B. K. McConnell, H. H. Bebout and John Fulton.

WINTERS, TEXAS.—The Winters Independent Telephone Company, recently incorporated, has elected the following directors: F. L. Pierce, R. A. David, L. A. David, J. L. Allred and M. J. Sanders.

WINCHESTER, VA.—The Frederick & Clark Telephone Company has elected the following officers: President, Charles Mullikin; treasurer, Shirley Carter.

ONANCOCK, VA.—The Accomac & Northampton Telephone Company has elected the following officers: Frank Fletcher, president; John M. Bloxom, vice-president; directors, J. W. Bowdoin, W. W. Kerns, N. T. Mason and J. N. Fletcher.

BELOIT, WIS.—The following officers have been elected by the Farmers Telephone Company: President and manager, Geo. Gesley; vice-president, John Jones; secretary and treasurer, E. H. Skinner.

MEDICINE HAT, ALB., CAN.—The Alberta Southeastern Telephone Company has elected the following officers: President, S. T. Fawcett; vice-president, F. L. Crawford. Directors: John Huston, W. C. Harris, W. Rutherford, G. H. Smibert and J. H. Spencer.

MISCELLANEOUS.

CUMBERLAND, O.—The telephone line running from Cumberland to Spratt has been acquired by D. C. Carter, of Cumberland.

MORGANVILLE, KAS.—The name of the Farmers' Home Telephone Company has been changed to the Swedish Telephone Company.

CLARESHOLM, ALB., CAN.—The ratepayers of Claresholm are discussing the advisability of organizing for the purpose of erecting a municipal telephone system. Address W. Moffat.

MEDICINE HAT, ALB., CAN.—The city council has unanimously decided to prepare a by-law to raise sufficient money for the installation of a municipal system. Address F. G. Forster, Mayor.

BRANDON, MAN., CAN.—The city council unanimously passed a resolution in favor of the immediate construction of a municipal system, and Hon. J. H. Howden, minister of telephones for Manitoba, has promised his assistance. Address S. E. Clement, Mayor.

VIRDEN, MAN., CAN.—At a recent meeting of the city council it was decided to at once make arrangements for the construction of a municipal telephone system. Address A. G. MacDougall, clerk.

PERSONAL.

I. I. PYLE has been appointed manager of the exchange of the Delaware & Madison Telephone Company at Anderson, Ind.

HOWARD KEYSER, formerly county manager for the Sunset Telephone Company at San Bernardino, has been appointed manager of the district of which the headquarters is located at San Jose, Cal.

New Construction in the Field

BIRMINGHAM, ALA.—The Home Telephone Company, which is constructing a trunk line from Louisville to New Orleans through Nashville, Birmingham and Mobile, has completed the line to Birmingham with the exception of about ten miles out of Columbus, Tenn., toward Nashville. This gap will be closed within a week, and the through line will be in service.

ENSLEY, ALA.—Many improvements are being made by the People's Telephone Company at Ensley, Ala.

CISNE, ILL.—The lines of the Farmers' Telephone Company are to be extended.

LENA, ILL.—The Freeport Telephone Company is rebuilding its lines between Lena and Pearl City.

LEBANON, IND.—It is the intention of the Lebanon Telephone Company to erect and equip a new exchange building in this city, and also to change the magneto system to that of a full common battery system.

MAJENICA, IND.—Additional lines are being erected by the Majenica Telephone Company.

KEOKUK, IA.—Considerable construction work is to be done by the Mississippi Valley Telephone Company at Keokuk.

SALEM, IA.—A line to Denova from Salem is one of the improvements planned by the Salem Telephone Company.

OAK HILL, KAS.—It is the intention of the Farmers' Mutual Telephone Company to build a trunk line to the county seat.

GRAND RAPIDS, MICH.—The Citizens' Telephone Company is at work on the installation of its new system at Holland.

WAYNE, MICH.—The People's Telephone Company contemplates the erection of a number of rural lines.

MADELIA, MINN.—A new rural line from Madelia through Fieldon township is to be erected by the Madelia Telephone Company.

NEW ULM, MINN.—Many new rural lines are to be erected by the New Ulm Rural Telephone Company.

RUSSELLVILLE, MO.—The Russellville Telephone Company has extended its system into Jefferson City.

NEBRASKA CITY, NEB.—It is the intention of the Nebraska City Telephone Company to expend a large amount of money in improving its system. A new exchange building is to be purchased and a new switchboard installed.

WILSON, N. C.—An entire new system is being installed by the Carolina Telephone & Telegraph Company at Wilson.

SINCLAIRVILLE, N. Y.—The Independent Telephone Company, of South Stockton and Centralia, is installing its system at Sinclairville.

BRANDT, O.—Lines connecting Brandt and Sulphur Grove are being constructed by the Home Telephone Company, of New Carlisle.

MAGREW, O.—A new exchange is to be installed by the Urbana Telephone Company, of Urbana, at Magrew. The exchange will start with about one hundred telephones.

CHIPPEWA FALLS, WIS.—Many improvements in its system are planned by the Chippewa County Telephone Company.

OREGON, WIS.—Among the improvements planned by the Dane County Telephone Company is the construction of a line from Oregon to Stoughton.

PORTAGE, WIS.—A new line from Merrimac to Portage is being constructed by the Portage Telephone Company.

MACLEOD, ALB., CAN.—The Alberta Government is building a long distance line from this city to Coleman.

MACLEOD, ALB., CAN.—The MacLeod Telephone Company has decided to put its plant in shape and make connections with the long distance lines north of this city.

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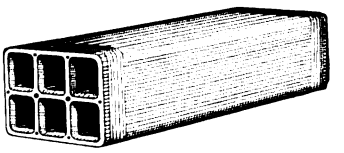

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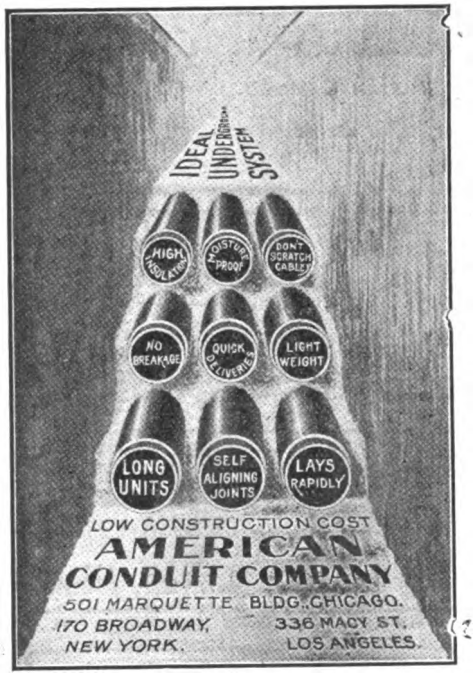

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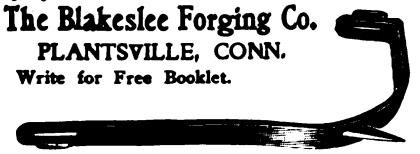

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S. H. COUCH CO., Inc., 162 Pearl St BOSTON, MASS.

TO BE FOREWARNED IS TO BE FOREARMED

If you are not using a measuring instrument to test your lines, get one at once, as you will need it many times before the summer comes. It would be just as sensible for a grocer to try and sell sugar by guessing at its weight as it is for you to try to locate a fault in a line by the same method. PIGNOLET VOLT-AMMETERS are designed to give the best results required for testing purposes. They are not complicated nor do they require experts to operate them. Another point in their favor is their low cost. There is no instrument on the market which will give you as accurate results at anything near the price. Hadn't you better write for prices and further particulars By buying one now you will save its cost many times over before you have had it a year.
LOUIS M. PIGNOLET, Originator of the Voltmeter Habit
78 CORTLANDT ST., N. Y.

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SOAKED IN WATER NINE DAYS

WORKS AS WELL AS EVER

This is the unsolicited statement of Mr. Price, Manager of the SHARP COUNTY TELEPHONE CO. of EVENING SHADE, ARK.

This is what he says:

EVENING SHADE, ARK., March 23, 1907.

WESCO SUPPLY CO., St. Louis, Mo.

Dear Sirs:

I received a card not long since from the ——— Telephone Co. stating an accident occurring to one of their telephones. Now, I had an accident near Evening Shade in which I lost one of the Wesco Bridging Telephones in the river. The telephone was under water 9 days when it was recovered and dried out. The varnish is still good except the box looks white. All the workings are all right except the induction coil, which had to be replaced. Outside of the looks and a little mud to be cleaned from the workings, the Telephone is O. K.

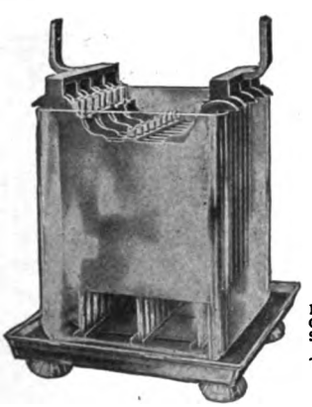
I am carrying it around as a show and test instrument.

Yours very truly,
C. C. PRICE, Manager.

Send for our New Bulletin No. 75 and get our prices on WESCO HONOR-MADE TELEPHONES.

THE WESCO SUPPLY CO.

FT. WORTH, TEX. ST. LOUIS, MO.



CLAIMS FULFILLED

Viewed from the standpoint of scientific theory, no other storage battery plate can compare, detail for detail, with the Gould Integral Plate. Many of the largest Telephone Companies in the United States have purchased Gould Storage Batteries on the *very apparent* merit of our battery. It is a most significant fact that in almost every such case. *repeat orders* have followed the first test order. The Gould Battery has succeeded because it has made good our claims for its unusual merit and economy.

Write for our catalogues.

SALES OFFICES
Boston—89 State St.
Chicago—Rookery Bldg.
San Francisco—Monadnock Building
Toronto, Ont.—62 Wellington St., West

Gould Storage Battery Co.

MAIN OFFICES
1 West 64th St.
New York City
Works, Depew, N. Y.

JUST A SUGGESTION

Take one of your busy 4-party lines and equip it with "POOLE" Lock-Outs. Leave it in service a month and then see how many of the four will stand a raise of $3.00 a year rather than go back to the old way. We know the answer, but we want your subscribers to impress on you the fact that the "POOLE" Lock-Out is a rate-raiser.

It won't cost you anything to try it, because we will loan you the Lock-Outs free and there is no other equipment required. Write today for our Booklet AL-2.

Mountain State Electrical Company

WHEELING, W. VA.

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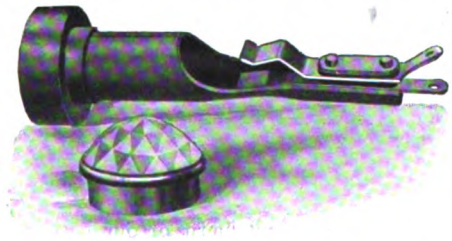
DEAN TELEPHONE APPARATUS

SUPERVISION

POOR SUPERVISION MEANS POOR SERVICE

Strip of Line Lamp Jacks.

ALL the lamp jacks used on Dean Common Battery Switchboards are of the tubular type, not depending in any way on the mounting for holding the lamp or lamp caps in place. The lamp jacks are so constructed that heat from the lamp is quickly radiated, obviating any damage caused by over-heating.



Pilot Lamp Jack.

Dean line lamp jacks are mounted on a rigid metal strip as shown in cut. The lamp caps are made in the form of a guard, from tempered spring steel, preventing breakage of the translucent covers, the lamp, and the accumulation of dust and dirt over the lamps which happens when the covers become cracked, making the supervision dim.

Dean line lamp caps are easily removed, being held in place by spring pins, which pass through the lamp jack mounting. The numbers furnished with our caps are removable and interchangeable. The opals used on our pilot lamps are large, making a bright but evenly distributed light. Our supervisory lamp jacks are all self-contained and have steel opal guards. They in no way depend on the mounting on the board for holding the lamp in position. Perhaps we could give you some new information on supervision. Write us, care Department B.

Supervisory Lamp Jack.

Factory and General Office
Elyria, Ohio

Branch Office
Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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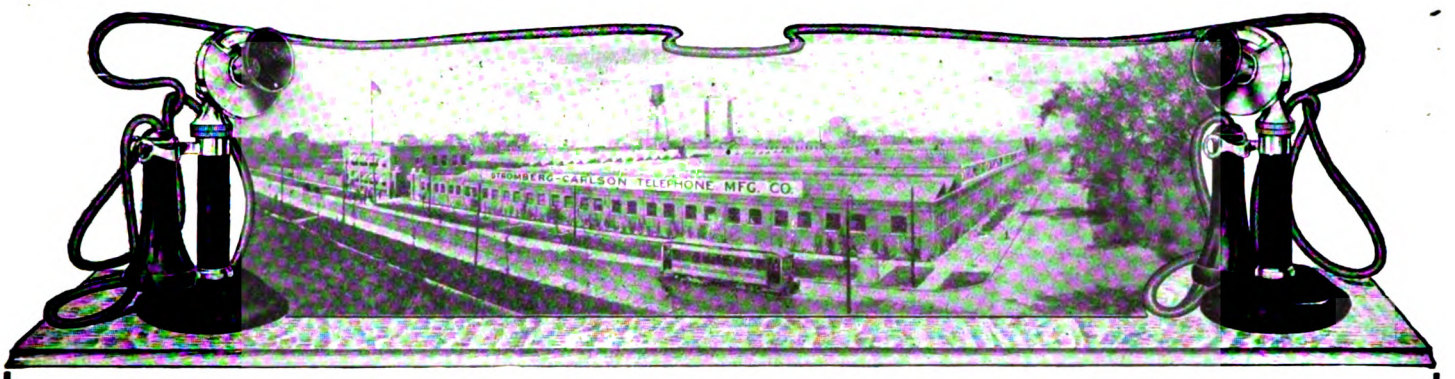
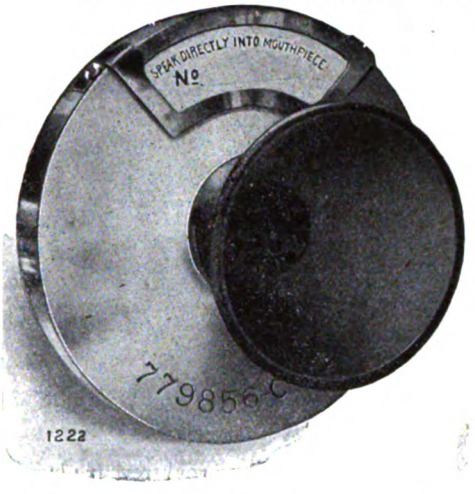


"STROMBERG-CARLSON"

Compact Type and "Central Energy" Style BRIDGING TELEPHONES

Are Equipped with The "Stromberg-Carlson" Transmitter

No. 2 Card Frame includes Bristol Board card marked as shown in illustration with blank space for subscriber's telephone number. Special cards furnished at small additional expense if required.



A separate mounting lug may be furnished with this transmitter when necessary to mount transmitters on arms not originally designed and drilled for our transmitter. The name on the transmitter back is a guarantee.

No. 7-B TRANSMITTER WITH No. 2 CARD FRAME
(The letter C affixed to serial number designates *Common Battery* or *Generator Call.*)

This No. 7 type Solid Back Transmitter is a leading product of "Stromberg-Carlson" quality—the acme of mechanical perfection—the most efficient transmitter—giving absolute satisfactory service over short and long distance lines under all conditions in every part of the world to-day.

We make a superior transmitter, because we are the only manufacturer making everything that goes into our transmitter and because we adhere to the scientific and theoretical principles of construction necessary to produce a perfect transmitter.

Every ounce of granular carbon and every polished carbon electrode used in Stromberg-Carlson transmitters is made in our **Carbon Mill** in Rochester, where the process of grinding and refining carbon is under our constant surveillance.

The front is **formed** and **drawn** from a special grade and quality of sheet brass. A 1,000 pound drop hammer was installed to do this minor operation. Every detail is made with the same care, and expense has not been considered in developing each article required in a perfect transmitter.

The mica diaphragm is clamped securely and uniformly around its entire periphery, making the carbon chamber ABSOLUTELY MOISTURE PROOF. With this construction the mica diaphragm is the controlling factor and must be tuned to a pitch equal to the average pitch of the voice. We have determined this feature, after a long, thorough study and series of exhaustive tests, resulting in a form of solid back transmitter that excels any other form of transmitter on the market to-day.

This tuned diaphragm will respond readily with the voice waves, producing a MAXIMUM VIBRATION, which in turn results in LARGE VOLUME with EXCELLENT ARTICULATION.

We give every part and every assembled transmitter mechanical and electrical tests before shipping and watch them after put in service. Our records consulted at random show shipments aggregating **70,000 No. 7-B GENERATOR CALL TRANSMITTERS,** with none of this lot returned defective.

Let us put a perfect transmitter on your telephone. All Stromberg-Carlson telephones are equipped with No. 7 type Solid Back Transmitter.

Order No. 7-B for Generator Call Service—No. 7-A for Central Energy Service.

We solicit your orders for immediate requirements.

STROMBERG-CARLSON TELEPHONE MFG. CO.

ROCHESTER, N. Y. CHICAGO, ILL.

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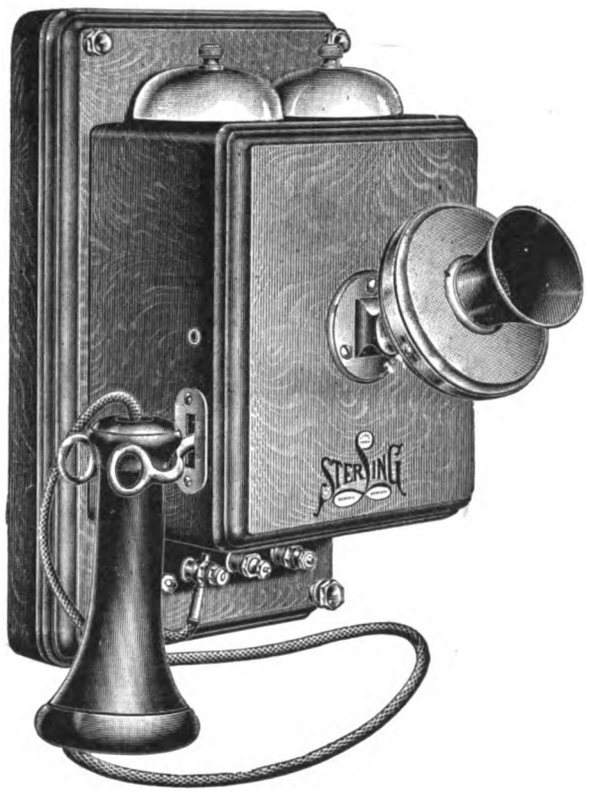
IS IT HARD ?

TO COLLECT RENTALS?

TO PLEASE SUBSCRIBERS?

TO PAY DIVIDENDS?

TO BUILD UP YOUR PLANT?



"GOOD GOODS"

No. 20

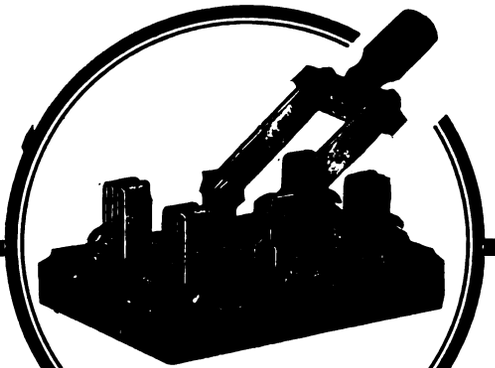
ARE YOU UP AGAINST IT? IF SO, PUT IN Sterling Phones

They will act like oil on a stormy sea

THEY DO NOT GIVE TROUBLE

Sterling Electric Co.

La Fayette, Ind.



WRITE FOR BULLETIN

CLIPS

ON ACCOUNT OF THEIR PECULIAR DESIGN, THE CLIPS SPRING TOWARD THE BLADE AND MAKE A PERFECT SELF-ADJUSTING CONTACT. LOTS OF OTHER POINTS TOLD IN BULLETIN.

RECESSES IN THE BASES HOLD CLIPS FIRMLY AND KEEP THE ALIGNMENT.

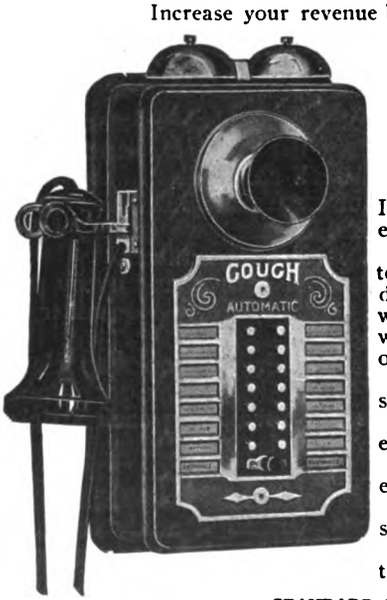
RECESSES

TRUMBULL TELEPHONE SWITCHES

THE TRUMBULL ELECTRIC MFG. CO.

NEW YORK 136 LIBERTY ST. PLAINVILLE, CONN. BOSTON 65-67 OLIVER ST.

Increase your revenue by installing



Couch Automatic Intercommunicating Telephones

Instead of Private branch exchanges.

They give automatic intercommunication between departments, and connect with central exchange without the medium of an operator.

More convenient for the subscriber.

More economical to operate, and

More satisfactory to everyone.

Made in five standard sizes.

Let us tell you all about them.

STANDARD SIZES:

8	intercommunicating buttons,	1	exchange button	
14	"	"	1	" "
18	"	"	1	" "
24	"	"	1	" "
28	"	"	1	" "

100% CHEAPER THAN BRANCH EXCHANGE

100% QUICKER; 100% MORE SATISFACTORY.

S. H. COUCH CO., Inc., Manufacturers

162 PEARL STREET, BOSTON, MASS.

Western Sales Office:
PETER F. HENSEL, 324 Dearborn St., Chicago, Ill.

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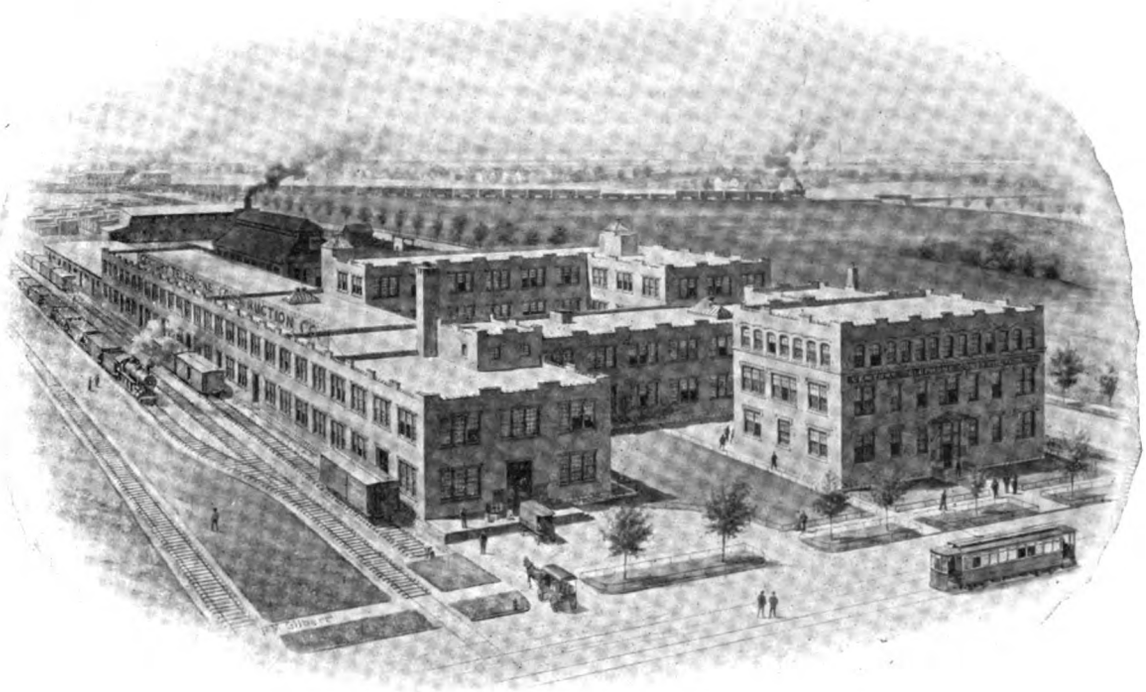
CENTURY
100% GOOD

Century Common Battery Exchanges Complete.
Century Switchboards for Every Service.
Century Telephones with Platinum Electrode Transmitters.



W-A Wall and Desk Telephones.
W-A Carbon Electrode Transmitters.
W-A Intercommunicating Systems.
Rural Systems.

CENTURY TELEPHONE CONSTRUCTION CO.
BUFFALO, N.Y., U.S.A.

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KELLOGG

TELEPHONE APPARATUS

ALL KELLOGG TELEPHONE PARTS

Are Made From the Best Grades of Material and Are Carefully Assembled by Skilled Workmen, Thus Making Everything High-Grade Throughout

For Central Battery or Magneto Use.

The tubular hard-rubber covered standard, with hollow brass shell, nickel plated base, is distinctively KELLOGG.

The transmitter hinges at top of standard, and there is mounted in base the hook switch and hard-rubber terminal block for receiver and desk stand cords.

The hook switch is of the toggle joint type, having a long motion of the springs, thus obtaining most excellent contacts with only a minimum motion of receiver hook.

All necessary parts are properly insulated, are easy of access and are made as nearly dust proof as possible.

THIS IS WHY

The Standard of Excellence Is Always Maintained By Kellogg Apparatus

Correspondence Solicited Prices Furnished Promptly

BRANCH OFFICES:

PHILADELPHIA, PA.	CLEVELAND, O.	KANSAS CITY, MO.	LOS ANGELES, CAL.
Keystone Tel. Bldg.	Electric Bldg.	1413 Main St.	318 W. Second St.

KELLOGG SWITCHBOARD & SUPPLY COMPANY
CHICAGO, ILLINOIS, U.S.A.

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THE STANDARD
"HEMINGRAY"
All With The
"Patent Drip Petticoats"

The Hemingray-Glass Co., Office, COVINGTON, KY. Factory, MUNCIE, IND.

— ESTABLISHED 1848 —

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U. S. COMBINED

Cash Register and Pay Station

[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

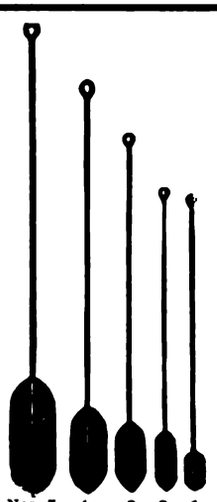
It protects both patron and company.

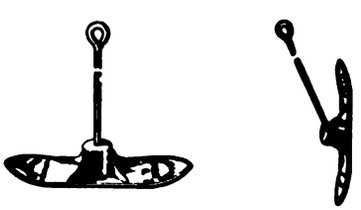
It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE
United States Coin Register Co.
TOLEDO, OHIO





Hercules Anchor

(PATENTED)

The Iron Dead Man

Made in five sizes, from that for 20-foot pole to large one for extremely heavy strains, wrecking trains, etc.

They are the best anchor in every way for holding up heavy leads and round corners. Easy to set, pull against solid earth and will not creep.

As they are made of Malleable Iron, they are practically indestructible. All anchor plates guaranteed.

Send for descriptive circulars and prices.

Manufactured by

THE W. G. NAGEL ELECTRIC CO.

26-30 ST. CLAIR ST., TOLEDO, O.

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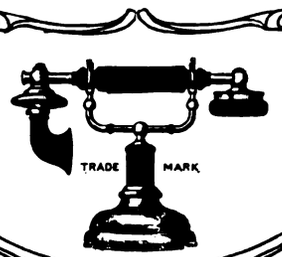

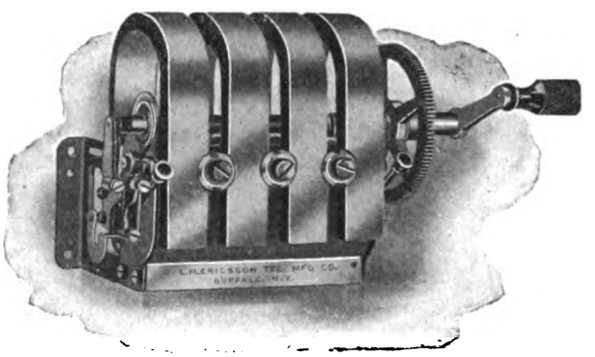

Ericsson Generator

The illustration shows our Standard 4-Bar Generator.

The magnets are made from our own steel, which is a later discovery than "Tungsten."

Instead of a cast iron field, pole pieces of pressed steel are employed. The sides are ground so as to bring the ends of the permanent magnets within a minimum distance of the armature center, securing a maximum efficiency by increased lines of force.

The construction of the generator is such that a three bar can be converted into a four bar or a four bar into a five bar generator.

An additional brush spring and a commutator may be put on any generator for pulsating currents.

The larger gear is made of 3-16 inch hard rolled sheet brass, not soft castings. Gears are ground together, insuring noiseless running.

"Ericsson Workmanship"

L. M. ERICSSON TEL. MFG. CO.
BUFFALO, N.Y.

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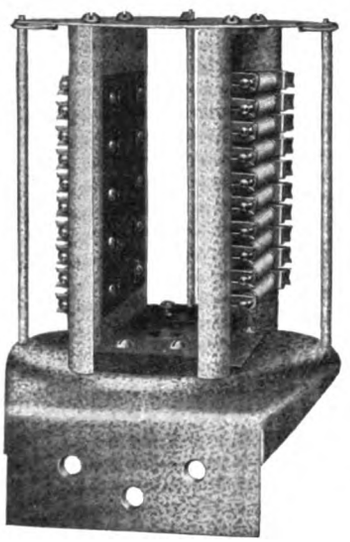
Cook's All Metal Terminals



Type T 16—With Cover Removed.

These terminals are constructed entirely of pressed steel—no castings. Light in weight and very strong. Frost or handling cannot break them.

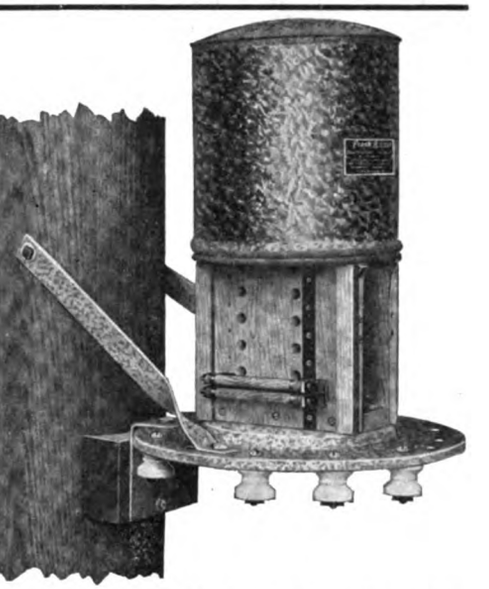
Absolutely no woodwork to swell, split or warp.

Covers slide up and down easily and will not stick in damp weather.

Equipped with individual protector mounts. Buy what you need—add when you want.

Heavily galvanized so they will not rust.

Better Terminals at the Old Prices—No Increase.



Type T 17—A Combination of Terminal and Distributing Ring. Made in All Metal. For Side of Pole.

Frank B. Cook. MFR.

238 West Lake Street, CHICAGO, ILL.

AS AN INVESTMENT

there's nothing more safe, more sure, more profitable—in the telephone business—than the securities of an Independent telephone company operating our AUTOMATIC TELEPHONE SYSTEM—

BECAUSE it gives more service, better service, prompter service, more accurate service than a manual system (and also an absolutely secret service, which no manual system can give) and

BECAUSE it costs less to operate, less to maintain, less to enlarge than a manual system, or

TO SUM IT ALL UP, the AUTOMATIC TELEPHONE SYSTEM produces a better telephone service, commanding a higher price, at less cost than inferior service can be produced for by a manual system.

THAT IS THE REASON WHY the AUTOMATIC TELEPHONE SYSTEM makes the securities of the company using it safe, stable and profitable, and why it has been adopted by the Independent telephone companies in the following cities:

Aberdeen, S. D.
Akron, Ohio.
Allentown, Pa.
Auburn, Me.
Auburn, N. Y.
Battle Creek, Mich.
Beaver Falls, Pa.
Bellingham, Wash.
Butte, Mont.
Cadillac, Mich.
Champaign, Ill.
Chicago, Ill.
Cleburne, Texas.
Columbus, Ga.
Columbus, Ohio.
Dayton, Ohio.
Denver, Colo.
El Paso, Texas.
Emaus, Pa.
Fall River, Mass.
Grand Rapids, Mich.
Hastings, Neb.
Havana, Cuba.
Hazleton, Pa.
Holland, Mich.
Hopkinsville, Ky.
Jonesboro, Ark.
Lake Benton, Minn.
Lewiston, Me.
Lincoln, Neb.
Los Angeles, Cal.
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Traverse City, Mich.
Urbana, Illinois.
Van Wert, Ohio.
Walla Walla, Wash.
Wausau, Wis.
Westerly, R. I.
Wilmington, Del.
Woodstock, N. B., Can.

AUTOMATIC ELECTRIC CO.

Van Buren and Morgan Sts., Chicago, U. S. A.

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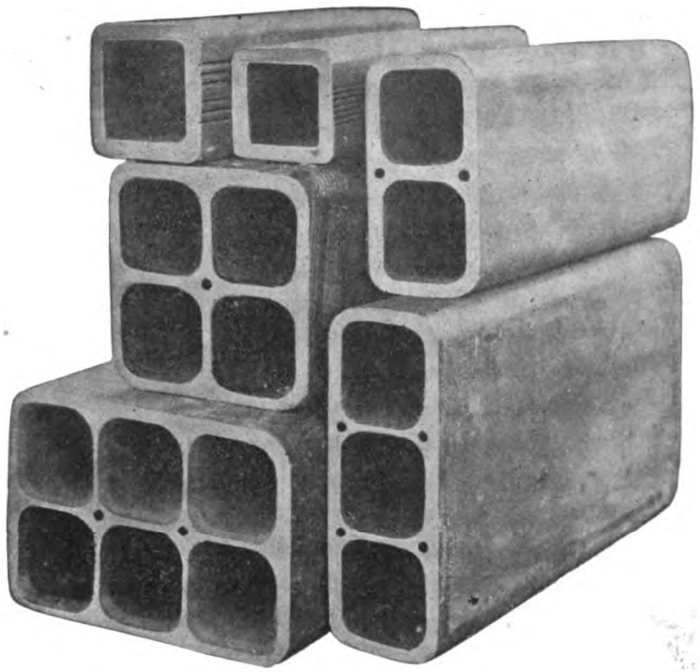
COMMERCIAL

WAY DOWN ROCK-BOTTOM

PRICES

ON

VITRIFIED CLAY CONDUIT



We would like to tell you about it—write us. Cable Specialties and Cable Splicing Tools.

Commercial Electrical Supply Co.

15th STREET, ST. LOUIS, MO.

COMMERCIAL

The Use of Toll Circuits

Is the stock in trade of a telephone company. It is that which the company sells to the public at so much per minute, and as such it represents money just as fully as does the stock carried by any merchant.
The public should pay for all it takes.

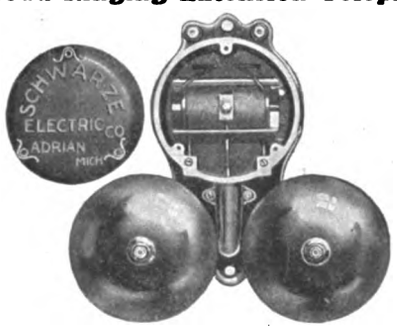
THE CALCULAGRAPH tells exactly how much use of a toll line is chargeable to the public including excess or over-time. It prints ELAPSED TIME. IT MAKES NO CLERICAL ERRORS.

CALCULAGRAPH COMPANY

1437 JEWELERS' BUILDING, NEW YORK CITY

Magneto Loud Ringing Extension Telephone Bells

Gongs 6-inch to 10-inch



All Resistances — All Weatherproof

Efficiency, Durability and Price will interest you.

Schwarze Electric Co., Main Office & Factory, Adrian, Mich.

Branches { Chicago, 324 Dearborn St. St. Louis, Mo., 708 Victoria Bldg. Pittsburg, Renshaw Bldg. San Francisco, 903 Atlas Bldg.

Telephone Wire and Cables

BARE COPPER LINE WIRE

Weatherproof and Rubber Insulated Wire and Cables — Aerial—Underground—Submarine Lead Covered Cables

TERMINALS—STEEL STRAND—HANGERS

Standard Underground Cable Company

PITTSBURGH, PA.

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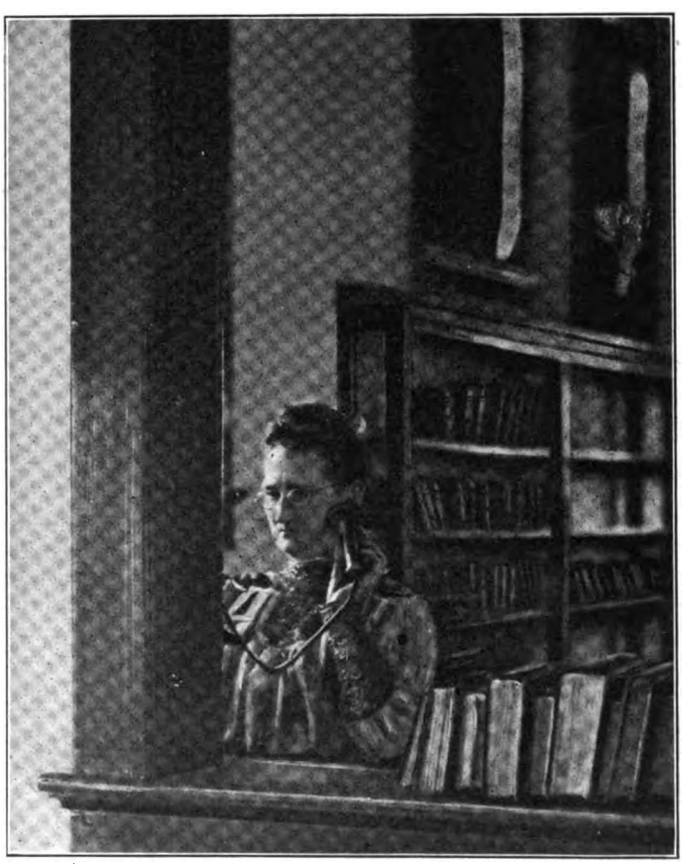
The Telephone in Library Extension Work

By Mrs. D. E. Allen.

HOW to make the books under her charge attain the fullest measure of usefulness, and serve the interests of their owners most constantly and easily, was one of the problems which the writer has had to solve. As librarian at the public library of Downs, Kansas, it was necessary to devise some means for putting such information as is contained in the books on the shelves at the disposal of the greatest number of those who could use this information. Although it seems to be a new idea, what could be more natural or simple than to use the telephone for this purpose? That is how the difficulties were overcome.

The people who are entitled to use the books in this library are widely scattered, some of them in the thickly settled part of the town, but a great many more living on farms in the surrounding country. Still, widely separated as these people are, they nearly all are telephone users. The lines form a network over this entire section. In the town there are about 225 telephone subscribers, and nearly 400 in the country, using rural lines, who can be connected with the instrument at the library by the operator at the central office.

At the present time, the plan of educating people to use the telephone for communicating with the library having been in operation for some months, there are perhaps an average of thirty requests per week for information by telephone. From this it is clear that the plan does not become burdensome to the librarian, but rather gives her that opportunity to extend her service which she requires in order to get the most hearty support from the people.



The Librarian at Downs, Kansas, Giving Information to a Rural Telephone Subscriber.

Naturally the communications over the lines may be divided into three classes. Farmers and business men call up to obtain information which they need at the moment, and which is most easily to be obtained from the books of the library. A few days ago, for example, a man said: "I have forgotten the number of pounds of wheat there are in a bushel; will you tell me how many?" Many queries along similar lines are made from day to day, Another example of reference to the library in the settlement of some business matter is revealed in the following incident: Answering the bell one day the writer found on the line a member of a school board in a rural district, anxious to know what encyclopedias were used in the library, and what, in the librarian's judgment, were the best. He was being interviewed at that moment by an agent, and wished to have advice which would help him to obtain the best books for his school.

As an aid to those who wish the best available references in educational work, the library telephone in our town has now become indispensable. Teachers and pupils in a country school very often need more information than can be obtained from the books they have in the schoolroom. When they telephone to the librarian she promptly looks up the facts in the books under her care, and tells them to the waiting teacher. Pupils who are required to prepare biographies and essays in their school work, and country educational clubs or debating societies find the telephone reaching the public library a most convenient means by which they may be assisted in any line of study. It is rare for a day to pass without the receipt of a call from some child for facts bearing on a school lesson, such as, "Will you give me some points on the minerals of Idaho?" or "Where was the fort called the Alamo, and how did it become noted?" Then there are the older people, who ask for information not only about a wide range of general subjects, but along literary lines. For example, the other day a person called by telephone to find who wrote the book, "Locusts and Wild Honey," and what else he has written. After the information had been secured by proper reference she was informed that the book was written by John Burroughs, who is also the author of "Signs and Seasons," "Birds and Poets," "Wake Robin," etc.

Standard reference books, as is customary in all libraries, must not be taken from the building. In cases of debates rivalry between the opposing sides is keen, and calls for statements from the standard works are made in large numbers.

In the routine of the library the telephone is a great help

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to the librarian and the book user. Rules state that loaned books may be kept two weeks, and at the end of that time must either be renewed or returned. Renewal by telephone is allowed, and this privilege is very much appreciated by the people in the country, and even by those in the town if it happens to be bad weather, or if for any reason it is inconvenient to get to the library. Every day there are calls for renewals in this manner. Frequently a book user tells the librarian that a book has been taken by a child, and a certain other book is desired. If that book is not in suggestions may be made over the line and another chosen which will be thoroughly satisfactory.

MONTANA LEGISLATURE FORCES RAILROADS TO STOP DISCRIMINATING AGAINST INDEPENDENT TELEPHONE COMPANIES.

MONTANA has put herself in line with the states which are recognizing the necessity of giving Independent telephone companies an opportunity to install their instruments in railway stations. House bill No. 291, by which this privilege has been secured, reads as follows:

"An act to require railroad, telegraph and express companies doing business in the State of Montana to permit the installation of telephones in their offices, and to answer calls made over such telephone connection during business hours, and to provide a penalty for the violation of the provisions of this act."

BE IT ENACTED BY THE LEGISLATIVE ASSEMBLY OF THE STATE OF MONTANA:

SECTION 1. It is hereby made the duty of every railroad, telegraph and express company doing business in the State of Montana to install or allow to be installed in its ticket office, public office and freight office, in all cities and town in this State where there are, at the time, one or more public telephone exchanges, a telephone of each public telephone exchange in said city or town, and to maintain in each of said offices direct telephone connection with each of said exchanges; but nothing herein contained shall be construed to require said railroads, telegraph or express company to build a telephone line, it being intended to require such company or companies to install or allow to be installed a telephone in each of its offices, where it can be obtained by them as they may be obtained for other business offices in the same vicinity. Each railroad, telegraph and express company shall cause to be promptly answered all calls made over such telephone connection during business hours; provided, however, that such railroad, telegraph and express companies shall not, in the absence of an agreement to that effect, be required to bear the expenses incidental to the installation of said telephones, or to any charges for the use thereof. Over such telephone connection such railroad, telegraph or express company shall cause prompt and correct replies to be made to all reasonable and proper inquiries over such connection during business hours concerning the passenger, freight or telegraph service of such railroad, telegraph or express company.

Section 2. The term "business hours" as used in this act shall be construed to mean such times as the office or depot of such railroad, telegraph or express company may be open, with an officer or agent of such railroad, telegraph or express company in charge for the transacting of business.

Section 3. Any railroad, telegraph or express company failing or refusing to comply with the provisions of this act, after its passage and approval by the Governor, shall be deemed guilty of a misdemeanor.

E. W. KING.
Speaker of the House.
EDWIN L. NORRIS,
President of the Senate.

Approved March 9, 1907.
J. K. TOOLE, Governor.
Filed March 9, 1907, at 11:35 A. M.
A. N. YODER, Secretary of State.

Thaddeus S. Lane, well known to Independent telephone men throughout the country, has recently been giving much of his time to the development of the Montana Independent Telephone Co., and writes from its headquarters at Butte as follows:

"Newly organized Independent companies are greatly handicapped, at the beginning of their operations, by the refusal of railroad, telegraph and express companies to permit the installation of telephones. This is particularly true in this State, where many important towns have only one railroad.

"We have had an especially aggravating instance of this at Billings, Mont., where we have nearly 1,000 telephones in operation as against about 150 Bell instruments. At least one-half of the latter are retained simply for the purpose of securing telephonic communication with the railroad and express offices, which are controlled by the same outfit. We were unable to get permission to install free service for the railroad company. In reply to our numerous applications, and petitions signed by citizens, the railroad company gave only one answer, namely, that it did not care to encourage competition in telephone service, as it eventually made annoyance and greater expense.

At the last session of the legislature there was passed, due to our representations of the desirability of such action, a bill requiring railroad, telegraph and express companies to permit the installation of telephones, a copy of which is herewith enclosed. Although this bill does not read exactly as we desire, we believe that it is a piece of legislation in the right direction, and is of great benefit to the Independent telephone interests in this State.

"Many railroad companies still refuse to permit the installation of Independent telephone service, claiming to have entered into an exclusive agreement with the Bell company. As a direct result of this piece of legislation we have recently received orders to install our telephone service for railroad companies at various points in this State, including Billings.

"We send this to you, thinking that it may be of some interest to Independent telephone operators in other states."

A measure having a similar effect was passed some time ago in Virginia, and the Vermont legislature, after hearing the representations of the Independent telephone association of that State, has taken appropriate action. Independent telephone associations in other States should prepare to take advantage of these precedents.

NEWLY MADE SUB-LICENSEE COMPANY IN TROUBLE AT KOKOMO, IND.

THE Citizens' Telephone Company, at Kokomo, Ind., is reported to have recently violated its franchise by permitting the Central Union (Bell) Company to connect its long distance wire with the local switchboard. This act was not only a violation of the provisions of the franchise which had been granted to the company, but was also against the wishes of the greater part of its subscribers, who are for various reasons said to be opposed to the idea of using Bell lines.

The company, since forming its new connections, is apparently afraid that all of its subscribers will depart, for it has adopted a new rule requiring applicants for telephones to sign an application and give a bond to pay for the service for one year. Of course, the result has been to make still more bitter the opposition to the company. It has now assumed an official quality, as the city attorney has decided that the company's charter gives it no right to take such action, and the matter will probably be tested in the courts.

PORT BYRON, N. Y., SUPPORTS INDEPENDENTS DESPITE FREE BELL SERVICE.

TWO years ago, in order to secure telephone service, a number of prominent people of Port Byron, N. Y., met and organized a telephone company. Although before this time it is said to have been impossible for many people to secure a Bell telephone on reasonable terms, that organization immediately sent a large force of men to rebuild its small system at the town, and sent canvassers to offer telephones free to all comers.

About seventy instruments were installed by them under these terms, and it is said that service has been furnished without cost to the users up to a few weeks ago. The Bell company at this time decided that it was sufficiently well established to enable it to charge for its service, but as soon as it did so most of the instruments were removed. The Independent company in the meantime has been growing rapidly on a substantial basis, having very nearly two hundred and fifty instruments in service, and new subscribers are continually being added to its system.

COLONEL J. D. POWERS MEETS WITH ACCIDENT.

COLONEL JOSHUA D. POWERS, of Louisville, who is well known to telephone men throughout the entire country, and was the genial toastmaster at the last Independent convention, at Chicago, had the misfortune, on April 16, to break his ankle. As he stepped to the pavement on leaving a building his foot struck a quantity of fine sand, twisting his left ankle and breaking the bones on both sides. Although the bones were immediately set, the accident will, of course, keep him confined to his home for several weeks.

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The Sterilization and Preservation of Poles*

By H. P. Folsom.

IN maintaining telephone, telegraph, electric light and interurban railway systems, one of the greatest problems that confronts the management is the inevitable depreciation of the outside plant. One of the largest items of this depreciation account is that caused by the rotting of poles.

The importance of this subject will be appreciated when we say that there are 250,000 miles of telegraph and about 500,000 miles of telephone pole lines in the United States, making a total of 750,000 miles. It is safe to say that these lines average thirty-seven poles per mile, making on this basis 27,750,000 poles. The poles used for electric railroads and electric light plants will make an addition of 5,000,000, or a grand total of 32,750,000 poles. This is in accordance with the government report of 1902. It is estimated that there were over 40,000,000 poles in use in the United States for supporting electric wires at that time. The value of these poles placed in the ground ready for use will average from five to seven dollars each, or about $200,000,000. This vast amount of property is exposed to the weather and is constantly decaying; this decay goes on day and night and is as certain to cut a pole down as death is certain to overtake a man and cut him down.

H. P. Folsom.

It is evident that if some means can be found to destroy at the soil line the germs which attack the poles, and at the same time protect the pole from the attack of those which remain in the surrounding soil, at a reasonable cost, the great problem of the depreciation of telegraph and telephone poles is solved. If the life of the pole from the surface of the ground up and down a few inches can be prolonged ten or twelve years it will add millions of dollars to the value of our telephone plants, and the stocks and bonds of all the companies that use poles will be vastly increased in value.

The average life of a white cedar pole is said to be from twelve to fifteen years; it varies, however, owing to its condition when placed in the ground and the nature of the soil and climate. All poles and posts rot off at or near the soil line. The decayed portion extends a few inches above, and about three or four inches below the soil line, the depth below being governed largely by the nature of the soil. The portion of the pole from the soil line to the top will last many years, possibly three times as long as the portion that goes into the ground.

Cause of the Decay at the Soil Line.

It is only of recent years that the true cause of the decay has been discovered, although there have been experiments made for the past forty years to preserve poles.

It would be interesting, if time permitted, to follow the many experiments in Europe and America in this line of investigation. Indeed our own many failures and successes in the past six or seven years would not be uninteresting. In many ways we have been fortunate. We have had the benefit of the experiments of the most learned scientists that have preceded us in this line of investigation; their mistakes as well as their successes have aided us. There is no lack of literature on the subject of preserving timber, covering the past seventy-five years. Since the germ theory of disease was recognized as true, the subject has engaged the attention of some of the most accomplished bacteriologists and microscopists in this country and in Europe. The United States Department of Forestry has in the past two years been experimenting with the co-operation of the Western Union Telegraph Company, in the preservation of telegraph poles. The result of their work has not been made public on account of the time engaged being so short. The great trouble with most of the work done is that the experimenters have been endeavoring to sterilize the pole before placing it in the ground; our endeavor has been to sterilize and protect the poles already in the ground.

It has been proved beyond question that the decay which takes place at, or near the soil line of the post or pole, is caused primarily by living organisms, namely, bacteria or fungi, and in some rare instances by insects. Bacteria and fungi are both low forms of life; they multiply when once they attack the pole with great rapidity, and since their action on the fiber of the wood is practically the same, they will be considered in this paper together. They attack either dead or living timber; on dead timber they attack the walls of the cells and the result is the familiar decay or rot under consideration.

Conditions Necessary for the Growth of the Fungi and Bacteria.

There are two conditions necessary for the existence and rapid growth of those living germs of destruction.

First, there must be a certain amount of dampness or water.

Second, there must be a certain amount of heat, and some scientists claim a certain amount of oxygen. This they claim is shown by the fact that bacteria and fungi do not ordinarily affect the pole more than a few inches below the soil line, unless the soil surrounding is very loose or porous. It has been observed that a line of poles running through a pasture field where there is grass growing, will be more quickly attacked than in any other situation. Again, a line of poles situated on the north side of a hill will be more quickly attacked than on the south side, provided the soil is loose and porous. A pole under water will not be attacked by fungi and bacteria, neither will it be attacked when surrounded by soil containing certain chemicals. A few years ago it was thought by telegraph and telephone companies that, if the dirt was heaped up around the pole, thus leaving a certain amount of drainage away from it, no decay would take place at the soil line. Experience has shown that this was a mistake; the pole was attacked just the same, only a little higher.

It will be observed in passing, that the great enemy of the telephone pole is the same that attacks the millions of railroad ties in use. The conditions surrounding a railroad tie are more favorable for the rapid growth of the bacteria and fungi than in the case of a pole. They lie flat on the ground, constantly absorb moisture, and being exposed to the rays of the sun, have the two necessary conditions for rapid growth. The problem of protecting and sterilizing railroad ties is a much more difficult one than we have to contend with in the case of telephone poles, although it is generally supposed by experimenters that this is not the case.

Realizing the great importance of this subject we began our experiments with antiseptics about six or seven years ago, although some of our experiments in the preservation of posts and poles have extended over a period of nearly twenty years. We directed our attention to poles that were in the ground and that were already infected. We believed if it were possible to

* Abstract from a Paper read at the Convention of the Ohio Independent Telephone Association.

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save the life of a pole which had already been attacked and was partially rotted off, it would be a comparatively easy task to sterilize and protect a pole which had lately been placed in the ground.

We believe we have found a means to sterilize poles in the ground that is practicable and certain, and that, too, at a cost which is reasonable and much less that the natural depreciation will amount to.

The Process of Sterilization.

We cannot better explain our process, and at the same time give you the results or our experience, than by relating some particular instances of our experiments. We were very desirous of making a thorough test; one that would conclusively demonstrate the efficiency of the process. It having been demonstrated by a long line of experiments that the cause of decay at the ground line was a bacteria or fungus growth, induced by a certain amount of moisture and heat from the sun, it was obvious that in order to sterilize and save the life of the pole, we must use an antiseptic that would penetrate the pores of the wood. We selected a class of poles that had been in the ground for about eight years and which were thoroughly infected with germs; indeed some of the poles upon which we experimented were over half rotted through, and could not have lasted two years under the most favorable conditions; they were so weak that they would not have survived a severe storm at all. We dug down around the pole about 18 inches, and with a pointed instrument scraped out and away all the rotted wood, we then applied our antiseptic chemicals in a plastic form with a trowel, filling all the holes and depressions even with the surface of the pole. We next placed around the pole an especially constructed asbestos jacket that would resist the action of the elements, such as rain, snow, freezing, and thawing. We filled in between the jacket and the pole antiseptic material in a powdered form, to the top of the jacket. We allowed the top of the jacket in some instances to remain open so that it received all the rain and snow that fell and which might run down the pole. In others we placed a cap over the top of the jacket. We were careful in mixing our antiseptics to use none that would cause the pole to become brittle and thus weaken it. We found that in all instances after a period of over six years, our antiseptics had completely sterilized the poles where applied and the decay was entirely arrested. In fact the poles were in as good condition as when the treatment was first applied. We carried our experiments further and treated a class of poles that had not been in the ground more than two or three years; the surface indications showed only slight infection, but the sappy portion had begun to scale and the cracks exhibiting unmistakable signs of decay. We did not attempt to clean off the decayed portion of this class of poles, but treated them by placing the jacket around the pole and depositing between it and the jacket our antiseptics and then sealed and fastened the collar above referred to. The jacket on these poles was about 18 inches wide, extending below the ground about 14 inches, and above the ground about 4 inches. Upon examination of this class of poles six years after treatment they were completely sterilized free from the effects of the bacteria and fungi. No signs of living fungi could be discovered under a powerful microscope.

Cost of Sterilizing Poles and the Profits Therefrom.

We are fully aware that the success of this process depends very largely upon the question of expense.

We have made some figures based upon our experiments which show that the cost is within the reach of all companies and can easily be paid out of the depreciation account and still leave a handsome surplus.

Suppose we take a plant of 5,000 poles costing $5.00 each, in the ground fully equipped. Their original cost would be	$25,000
At the end of 12 years they will have to be renewed at a cost of	25,000
Counting interest for 12 years on the last $25,000 equals	18,000
Making a total cost for 24 years of	$68,000

Suppose we take the same plant and apply the treatment.

Original cost of 5,000	$25,000
Cost of sterilizing after they have been in the ground two years $1.25 each (and it can be done for less)	6,250
Interest on this amount for 22 years	8,250
Making a total cost for 24 years	$39,500
Cost for 24 years without treatment	68,000
Cost for 24 years with treatment	39,500
Profit in favor of treatment	$28,500

It will be perceived that if the pole is preserved intact, with full strength for ten or twelve years by means of the jacket and chemicals, and it is removed or entirely gone, at the end of that time, the pole will be in the same condition to resist the fungi that it was when first treated, and will have its original strength and life.

Again in our calculations we have not taken into account the increased amount of trouble that always accompanies the use of old poles the last few years of their lives. This item of the maintenance account always increases as the poles grow older and weaker, and should be placed on the credit side, where the process is used. Then again, in all human probability, poles will be at least twenty-five per cent. higher in value 12 years from this time. If that be the case, the cost of the new poles when they have to be renewed would be $6,250 more, and the interest on this increased amount for 12 years would be $4,500, making $10,750 more to be added to the profits of sterilizing, or a total of $40,375 in 24 years.

The Annual Convention of Kentucky Independents

WHEN President M. B. Overly, of the Kentucky Independent Telephone Association, called the second annual meeting to order at 10 o'clock in the morning of Tuesday, April 16, 1907, he faced 138 delegates and representatives of Independent telephone companies in the State of Kentucky. The beautiful red room of the Seelbach Hotel was full of enthusiastic workers in the field. This banquet hall had been artistically decorated, before the arrival of the delegates of the telephone companies, with mottos, shields, maps and flags, while in the center hung a large lantern with the Independent colors showing clearly to every one in attendance.

Kentucky is divided into four districts, and in these four districts are 75 operating Independent companies. Thirty-five of these companies were represented at the annual meeting, practically every important company in the State having sent delegates.

As soon as the opening address by the President had been made, the Convention got down to real work. The Vice-President of each district presented a report showing the conditions in his territory, together with the growth during the past year. It developed, much to the surprise of every one present, that in this State were 41,640 Independent telephones against 42,052 Bell telephones. When these figures were announced and the fact was pointed out that the two interests were on practically an even footing, even though the cities of Covington and Newport are entirely undeveloped by the Independents, it called forth a round of applause that should have been heard by the co-workers all over the State.

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Routine matters filled up the time until noon, but when adjournment was taken for luncheon everything had been cleared away ready for the exchange of experiences and the instructive remarks that were on the program for the afternoon session.

When the convention re-assembled at 2 o'clock, it was addressed by Mr. George S. Shanklin, President of the Fayette Home Telephone Company, of Lexington, Ky. He spoke about Independent telephone securities in a way that riveted the attention of every one present. He told of the soundness of Independent telephone companies everywhere and the investigations that had been made of such companies by the two telegraph systems of the United States. He prophesied that the day would come when, for economical reasons, the Independent movement would absorb one system with its thousands of miles of pole lines already in existence, that could be quickly converted into long distance lines. He also called attention to the bogy of deterioration in telephone plants by comparing in detail the deterioration of telephone equipment and the equipment of traction lines. Mr. Shanklin presented facts and figures that showed that the deterioration in traction properties was nearly twice as great as that of the modern telephone plant.

A recital of conditions in Texas was given by J. L. Nunn, an ex-Kentuckian, now located at Amarillo in the Lone Star State. He referred humorously to their troubles of a technical nature with which he claimed to be unacquainted personally, but dwelt seriously upon the troubles of a financial nature that he was experiencing in meeting the tremendous demands for increased service, for the reason that the development was growing away beyond anything he had ever been connected with in a business way.

Various delegates from different parts of Kentucky followed with tales of experiences, crowned universally with success, and showing that the Independent movement was not only strongly entrenched, but a fighting organization of the highest grade.

The fighting side of the telephone movement was graphically given by R. E. Cooper, of Hopkinsville, who with his associates, has just brought to a successful close a struggle with the Cumberland Telephone & Telegraph Company in the adjoining State of Tennessee and primarily in the city of Nashville. When he closed with the modest statement that Tennessee has at least been freed, and that the Independents could now build a telephone plant in any town or city in the State, the Convention went wild.

The enthusiasm reached a climax when W. B. Stanfield, of Mayfield, Ky., told of the battles that had been fought by him and his associates in the Western part of Kentucky against the methods of the opposition.

The convention was brought to a close in the late afternoon after an election of officers for the ensuing year had taken place, which resulted in the choice of M. B. Overly, of Louisville, as president; W. G. Turpin, of Henderson, as secretary, and J. W. Chambers, of Winchester, as treasurer.

All persons were invited to a banquet to be held in the evening as guests of the Louisville Home Telephone Company and Central Home Telephone Company. When 8 o'clock came around, about 150 guests were seated. Toastmaster Donald McDonald, in his happiest vein, called upon various men here and there throughout the banquet room for appropriate remarks, which kept the assemblage in an uproar until about 11 o'clock.

In addition to the delegates from the various companies belonging to the Association, representatives of telephone companies located in Alabama, Tennessee, Illinois and Indiana, which are closely connected by business and long distance ties with the Kentucky companies, were on hand. Representatives of associations in other States were on hand in the persons of Jesse W. Weick, of Indiana, and Albert Parlett, President of the Virginia Independent Telephone Association.

About fifteen of the country's telephone manufacturers sent their officers or general salesmen, who became more thoroughly acquainted with their Kentucky patrons, and participated in the royal hospitalities of the Louisville companies.

At the conclusion of the banquet on Tuesday night, the opinion was expressed everywhere that the Kentucky Independent Telephone Association meeting had been successful from every view point.

Rural Party Line Ringing Codes*

HENRY GRANT NEWELL, of Orwell, Pa., an engineer who is must interested in the subject of rural telephony, contributes the following letter, which shows how his ringing code is built up, and gives a few suggestions about operation.

"Five or six years ago the writer devised a numeral ringing code which, in extensive use by the People's Consolidated Telephone System, has proven a great success, and decidedly superior to the old dot-and-dash code. This numeral code is easy to learn, easy to ring, easy to read, easy to remember. Old people and children, even, learn it in a few minutes and memorize the rings of a whole line almost as readily.

"From our directory is quoted the following:

EXPLANATION OF NEWELL NUMERAL CODE.

5 means a long ring—Four or Five brisk turns.
1 means a short ring—One complete turn—Ring off.
1, 2, 3 and 4, the number of shorts—Leave crank at low point.

For example we have the following rings:

15	51	151	35	255	1515
·—	—·	·—·	···—	··——	·—·—

the latter known as "fifteen-fifteen." 1551 is also equivalent in muscular exertion in ringing 255 or 552. No doubles are recognized, and as in all the best modern practice, no letters are used. Such antiquated symbols as: ——··—, lssl, or l o o l, and called "one long, two short and a long" are extremely crude, clumsy, confusing, and altogether out of date. We say 525 and that is the end of it.

"Long rings, 5, 55, 555, are reserved for switching stations, as many rural lines have two terminals and others three. If there will never be but one switch to call, 55 may be used for a party who is more or less deaf; 51, 52, 552, are good rings for old people, having the long ring first. But the use of the long ring should be restricted as far as possible. This is borne in mind in making up the numbers, employing the simplest and easiest combinations first.

"Here are some desirable rings in the order of easy ringing, desirability, and special use, omitting such rings as 5551 or 55155.

Only one long ring.	1 ·	Ring off only.
	2 · ·	Seldom used. Both parties often ring off.
	3, 4	O. K. Fine rings.
	5, 55, 555	Reserved for switching stations, doctor, mill, store, etc.
	15, 51,	
	25, 52, 151,	
	35, 53, 251, 152,	
	45, 54, 351, 252 · ·	All easy, excellent. 19 rings so far.
	451, 154, 253, 352 · ·	Not as desirable.
Only two long rings.	551, 155, 515 ·	These are preferable. Very good.
	552, 255, 525, 1551, 5151, 1515 ·	All good rings.
	553, 355, 535, 2551	Next best.
	554, 455, 545, 2525	Forty rings.
	353, 454, etc.	If needed (!).

"Spaced rings: 2-2-2, 123, 313, 333, etc., as 22 (22· · ·) may be used (?) for general calls, directors, committees, etc.

"None of these are to be adhered to in strict order, for a line of twenty need not use such rings as 451, 154, 352, etc., but use instead the popular rings 515, 155, 551, etc. In a mill we used 5553 for obvious reasons.

*Continued from previous issues.

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"It is evident that the figure 7, or even 6, 8, or 9 may represent the long ring permitting the use of five short rings singly and in combinations, but this is very undesirable and unnecessary. Therefore, 5 is the best figure to use, and after four or five years' trial we see no improvement to be made in The Newell Numeral Code.

"As a matter of history it may be said that the writer, at an earlier date devised a code based partly on Roman numerals, as: — for V or 5. — - stood for VI (6), etc., up to ten which was ——. 12 was — — - -, and it was dropped as "no good."

"So were spaced rings as - - - - for 22, etc.

"As to just what is really best for general calls, fire alarm or emergency ring, we are in doubt. We find the continuous ring very convenient for testing out a partial or intermittent short circuit as in a swinging cross or faulty drop, and sometimes an extra long is used to awaken central.

"Someone has suggested six short rings as a general or emergency call. Is there anything better? Let us hear from the brethren.

"In using the numeral code, at once and forever drop all thought of "longs and shorts." It is a nuisance. Watch the rings for a day or two and read them, that is, call them *by number only*. In a few minutes the rings of a whole line are learned. Uniform ringing, too, is a great success with us. From the first, a short ring is always one complete turn only. Leaving the crank on the low point is not only handiest, but always insures a complete turn.

"We find that four or five complete turns for a long ring is best; three turns are too few and from eight to twenty turns are abominable. Fortunately few subscribers are so vigorous as to make cautioning on this point necessary.

"To give simple and exact instructions, in a tactful way—how to ring, how to talk, etc., are duties imposed on the installer. It is easiest and best for the new subscriber to learn just the right way at the start, as bad habits are seldom overcome if once firmly fixed.

"Best of all are simple and attractive instruction cards put out by the manager, and readers of the JOURNAL should send in samples.

"At the very start, also, however small the system, operators and others should insist what 'Number please,' else there is always a hitch in the service. Too often 'I want Bill Smith' is the call. Now if Bill were the particular Smith wanted, the proper form would be to give simply Orwell 52, Number 5, printed in the directory, Smith, Bill, 52 No. 5.

"Our directory is as clear and simple as the code. We find, as others have, that it is best to give subscribers their full names, as: John I. and Jas. E. Eastman, and it is valuable also to include the occupation and post office address.

"If the lines are numbered, the following form is correct:

LINE.	NUMBER.	SUBSCRIBER.	OCCUPATION, ETC.	POST OFFICE.
Line 12	No. 155	Allen, Jas H.	Gen. Mdse.	Apex, Pa.
Line 8	No. 35	Atkins, Thos.	Pension Agt.	Cebu, N. Y.
L 21	No. 515	Culver, Asa.	Ginseng Gardens	Athens, Pa.
10	No. 151	King, J. Thos.	Pedigree Holsteins	R16, Rome, Pa.

"If the lines are named as are sections of cities, use this form:

LINE.	NUMBER.	SUBSCRIBER.	OCCUPATION, ETC.	POST OFFICE.
Rome	No. 155	Baker, Jas. J.	Auto Repairs	Rome, Pa.
Rome	No. 4	Quick, P. D.	Express Agt.	Rome, Pa.
Rome	No. 552	Thompson Bros.	Millers	Rome, Pa.
Pike 1	No. 25	Baxter, Wm. T.	Farmer	R7, Athens, Pa.
Pike 2	No. 152	Bender, Sam.	Teamster	Athens, Pa.
Rush	No. 3	Compton, Ed. J.	Veterinarian	Lawton, Pa.

"Lastly, the very best practice for rural lines in all the details of construction, operating and management, should be developed to a finish and the highest standards rigorously insisted upon by connecting lines.

"THE AMERICAN TELEPHONE JOURNAL and its readers can do a great work for the Independent interests in this respect. Let us send in our experiences, offer suggestions, hold discussions, and get together generally in its pages. The Editor is willing, and it will help us all to more quickly and easily solve the problems which perplex us."

OFFICIAL BULLETIN NUMBER TEN OF THE INTERNATIONAL INDEPENDENT TELEPHONE ASSOCIATION.

SECOND SERIES.

ROCHESTER SITUATION—A DISTINCT VICTORY FOR THE INDEPENDENTS.

Following the filing of suit brought by the Attorney General of New York State, upon evidence supplied by officers and members of the International Independent Telephone Association, to prevent the Rochester merger, the American Telephone & Telegraph Company (Bell) has withdrawn its proposition for the purchase of the United States Independent Telephone Company of Rochester and its subsidiary properties. A reorganization committee is being appointed by those in charge of the U. S. I. affairs.

THE CONVENTION.

It will be the greatest and most important gathering of telephone men the world has ever known. Everything indicates that even the record-breaking attendance of last year will be surpassed, and the interest already manifested everywhere in the subjects to be considered could scarcely be greater.

Attend yourself; see that your companies and your State are well represented—and impress upon your associates the necessity of doing likewise.

Bear in mind that this is *your* convention.

REDUCED RATES.

Rate of a fare and one-third on the certificate plan has been granted by the lines of the Western Passenger Association and its affiliated organizations, covering the territory west of the Mississippi River, exclusive of the Pacific coast, but including the greater part of Illinois. Be sure to secure certificates when purchasing tickets. The lines of the Trans-Continental Passenger Association will have a special summer rate in effect from all Pacific coast points to Chicago. In the Eastern and Central States unlimited round trip tickets can be bought at a flat rate of 2 cents per mile, making the fare a little less than under the certificate plan.

PROGRAM.

The Advisory Board, consisting of the presidents of affiliated associations, will meet at the Auditorium Hotel on June 3, the day before the convention opens, at 10:30 A. M. The committees will also meet at the same time and place.

The convention proper will be called to order June 4 at 2:30 P. M. The morning and afternoon sessions on the following days will be from 10:00 A. M. to 12:30 P. M., and 2:00 P. M. to 4:30 P. M., respectively.

The program will be of unusual interest. It will include brief spicy papers and talks on the important issues, of which there is no lack this year. Due recognition will be given "Compulsory Interconnection," "Bell Overtures," "Long Distance Possibilities," "High Finance," and the various problems met with in the construction, operating, financial and business ends of the industry. Brevity will be the keynote in the formal proceedings, so that all may have an opportunity in the discussions. The Question Box will be a feature of each session.

You simply cannot afford to stay away *this* year.

Complete program will accompany the next Bulletin, which will be issued about this time next month.

INTERNATIONAL SCHEDULE OF MEETINGS.

It is planned to have a representative of the International Association attend all conventions of affiliated associations. To do this, it will be necessary to arrange a schedule of meetings without conflicting dates. It has been suggested that the schedule begin with the Southern States in January, the various States following in the most convenient geographical order, at least ten days apart.

The associations are requested to advise with the International concerning this matter before fixing dates for meetings after the Chicago convention.

HONORARY MEMBERS.

The list of honorary members is growing, but not as

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rapidly as it should. It is an honor that deserves to be looked upon with due respect, as no person can be elected to honorary membership without a vote of the executive committee, and then he will be elected to membership only upon the recommendation of three other honorary members.

MAP DEPARTMENT.

Did you get our letter asking for map data? Hurry the answer in. We want it for the convention display.

A Low-Priced Circle Top for Distribution

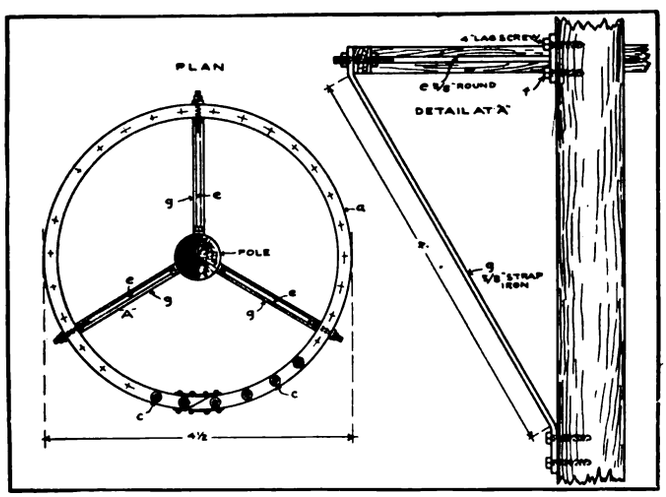
By R. B. Fegan, Manager Ithaca Telephone Company.

A VERY material saving over the prices frequently paid for circle tops for distributing in business and closely settled residential districts can be made by the use of material available at low cost in any city or town of moderate size. As against a cost of, perhaps, $14 to $20 apiece complete, which is frequently paid for circle tops, the writer has succeeded in building them for the comparatively small sum of $6 as the total cost for a 25-pair circle. The idea is to simply use for supporting the insulators which carry the wires wooden rims, such as are used on truck wagons. The material used in connection with these rims can be secured easily and at a low price from sources of supply available to everyone.

Two semi-circular sections are placed together and bolted firmly in position through quarter-inch iron plates, *b*, forming a circle 4½ feet in diameter. In place of the cross-arm pins, which in many cases have hitherto been used in circle tops, are substituted No. 4 knobs, *c*, arranged in pairs, one below the supporting circle and one immediately above, the two being held in place by a carriage bolt, *d*, passed through them both and the rim. The head of the bolt is placed at the top, and the lower knob is fastened firmly by the carriage bolt and a nut and washer at the bottom.

The head of the bolt sinks below the surface of the upper knob about one-eighth of an inch, and when in position is thoroughly covered with stove clay. This insulating arrangement does away with all electrical leakage which might occur from the wire on the top knob to that on the lower one if no such precaution were taken.

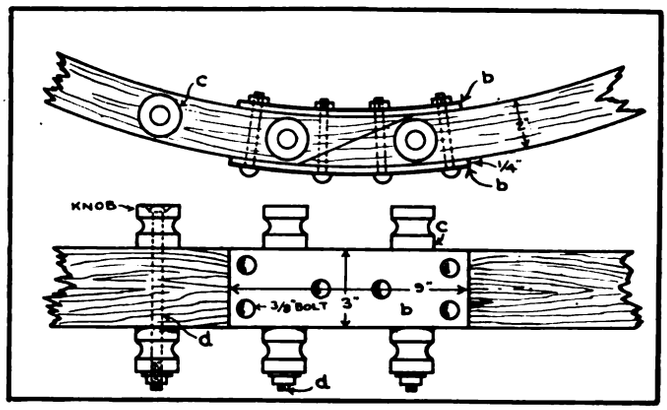
To fasten the circle to the pole a special form of brace is constructed, as shown in the drawing. In the first place three tee braces, *e*, run from the pole to the circle, each one of these being fastened to the pole by two 4-inch lag screws. In order to compensate for the varying sizes of pole tops the circle is fastened between two nuts, thus holding it securely from both sides, but giving a chance for adjustment. Between the outer nut and the wooden rim is fastened another brace of strap iron, which is



Plan and Half Sectional Views of Home-made Distributing Circle.

punched so that the horizontal brace can pass through it. This brace runs down diagonally to the pole, and is fastened by lag bolts. This method of fastening gives a circle top which is very securely and rigidly attached to the pole top. Should it be desired to place more than one circle on a pole, all that is necessary is to take three cross-arm braces and bolt them to the circles, giving a tier of circles one above the other about twenty inches apart.

All the work necessary to manufacture these circle tops can be done by almost any telephone man. He has only to purchase half rims of a wagon manufacturer, and have the connecting plates, rods and braces made by a local blacksmith. In small



Detail View, Showing Method of Splicing the Two Half-Rims and Fastening Knobs.

quantities the total cost is about $6, but if a larger number of them are made at one time an even lower figure may be obtained. The writer, although he has used this circle top in the city of Ithaca, N. Y., with good success, has not obtained a patent, and does not intend to, but offers these suggestions freely to managers of Independent companies throughout the country.

INDIANA INDEPENDENTS EXPRESS CONFIDENCE IN THEIR STRENGTH AT MUNCIE DISTRICT MEETING.

THAT the Independent telephone outlook in Indiana was never better is evidenced by the unusually large attendance at the Fifth District meeting of the Indiana Telephone Association held at Muncie on April 17. The meeting was called to order by A. J. Brown, of Winchester, president of the district branch, who congratulated the association over the large attendance. After the reading of the minutes and disposing of routine business, a three minute report was had from the representatives of every one of the twenty-three companies in the district. Never before were more encouraging reports made to a district convention, every representative reporting a large increase in the number of subscribers and stating that his plant is now taxed to its full capacity. Many members are now face to face with the necessity of enlarging their exchanges, extending their lines and installing additional equipment.

It was freely predicted that more money would be expended this year for improvements, extensions and betterments than during any previous year. The reports indicate that a high grade of service is being given, and patrons are well satisfied, giving their hearty support to the companies in nearly every instance where it is required. The members of the association are now very much interested in the development of toll business.

Delegates to the state convention were selected and election of officers held. A. J. Brown, of Winchester, and W. O. Miller, of Fairmount, were re-elected president and secretary, respectively.

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THE EDITOR'S PAGE

THE TELEPHONE AND THE PUBLIC LIBRARY.

NOWADAYS we hear a great deal about library extension work. Societies have been organized to aid in systematizing library work, and increasing the efficiency of library management, so that a wide number of lines of thought may be covered economically. This seems to be the main idea in the minds of those who speak of library extension, and the one which is emphasized in the various well developed schools which have been formed for training librarians. It has remained, however, for the librarian of a comparatively small town, namely, Downs, Kansas, to apply in a modified way the principles which form the foundation of what are generally admitted to be the most successful methods of so-called university extension work to her own local situation, and the immediate and practical success she has achieved shows the merit of her idea. Briefly stated, it consists simply in making all the information centered in the books under her care instantly available to the most distant person, in the town which supports the library, by aid of the telephone. This seems to be the one step needed to complete and make thoroughly practical the various plans for extending the usefulness of the library to its utmost limits. It makes it equally useful to the person who lives a few steps from its door and to the dweller on a remote farm.

Anecdotes which show the daily working and emphasize the worth of this association of the library and the telephone system are given in Mrs. Allen's article on another page of this issue. Her statement will put the matter clearly before managers of telephone systems throughout the country, and give them a suggestion which may make it possible for them to aid not only the business and social, but also the educational interests of the communities in which they live. In urging this advantage of telephone communication they will find still another means of strengthening the hold of their systems on the communities they serve. When the telephone is placed in every library, and people are taught to use it properly, we shall have gone one step farther toward the ideal of a telephone in every home, and in every public building and business establishment in the country.

A NOVEL FORM OF RETALIATION.

TELEPHONE subscribers usually keep a sharp lookout for any excuse to call for a discount on their bills. It has remained for the Bell company operating in Seattle to develop a situation which is especially interesting on account of its novelty, and amusing by reason of the unique way in which the tables were turned on the company.

It appears from the reports received from local sources of information that the company, which is hard pressed by a vigorous Independent opponent, has been diligently searching out plans for reducing expenses. When attention was turned to the operating department some ingenious individual found a loophole for gaining a few dollars by reducing the amount paid to the operators during the month of February. As they are paid on a monthly basis, and February is a short month, what could be simpler, or more just, than to reduce the wages in proportion to the smaller number of days in that month? So he reasoned, and so the company was convinced, and acted in accordance with its convictions. The wages were cut.

Perhaps no one knows just how the agitation started, but when the knowledge of this intelligent plan got around to the subscribers there was trouble in the air. They, too, pay on a monthly basis, and needed only to have the shortness of the month of February called to their attention, with the company's own suggestion as to the application, to turn the idea to practical account in their own interests. They insisted on a reduction in their bills. When the company protested, and collectors urged payment in full, they were met with a request to take out the telephones. A few months ago cartloads of Bell telephones which had been discarded and were being returned to the exchanges were common sights in the streets of Seattle, and the company was not anxious to see the experiment repeated. Every instrument taken out is a permanent loss, as the Independent company is able and very willing to take care of the business. So now the company is decidedly perplexed, while the operators are in high glee.

ANOTHER EXAMPLE OF REMARKABLE REASONING.

THE operating department of the Bell company which serves the territory along the Pacific Coast seems just now to be possessed of a positive genius for getting itself into trouble. The latest news from San Francisco is to the effect that the telephone operators in that city are planning to organize a union. Of course, this would never do, and the management took prompt action, issuing the following order:

"Any operator attending a meeting called for the purpose of organizing a union will be discharged. Every operator who does not enter the proposed union will receive a substantial increase in salary, amounting to from 30 to 50 per cent."

When the operators saw this it required no very astute application of the various processes of feminine reasoning to discern what was tantamount to an admission of weakness in the last clause. If the company were so much in need of operators that it would give so substantial a "raise" to those who would remain quietly in its employment, why could not the raise be forced? And if it were forced they would have all the fun of belonging to a real union into the bargain.

So the operators have met—three hundred of them—and are said to be determined to go ahead with their union whether the company is willing or not. In the meantime the company's order stands, and the young women are very much interested to see how far the company will go in making good both the threat and the promise.

PHANTOMS AND OVERLOADED LINES.

SOMETIMES we hear from a man who has a trunk line between two towns, with, maybe, eight, fifteen or twenty telephones bridged across it. He is very likely to ask if it will not be possible for him to "phantom" this line and get a third grounded circuit to be used for simultaneous telephony and telegraphy. Now, the only proper thing for a man in such a fix to do is, if he doesn't know just how far he can push the loading of his lines, to ask someone who will give him the information he needs. At the same time it will do no harm to call attention to the fact that the "phantom" principle does not permit of doubling up lines heavily loaded with instruments, but is effective only when applied to clear trunk lines. If the component lines are not well built, well balanced and highly insulated it is impossible to give good service over either the phantom or the original lines. New transpositions must be correctly made or all the circuits will be spoiled. Even under the best of these conditions, while in effect a third line has been added, the efficiency of the system has not been increased by 50 per cent., as the original lines are rendered less efficient. The phantom circuit cannot be made an excuse for the indefinite loading of lines.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

IRREVOCABILITY OF PERMISSION TO ERECT POLES ON FARMER'S LAND.

Your paper I find very useful. I have two questions that I wish you would answer. Eighteen months ago we built a telephone line on the public road and ran across one corner of a man's farm, setting two poles in his field with his verbal consent. Now the road has been changed to go around this corner of his farm, and he wants us to move the poles. Can he make us do it?

The other question is this: Can a party make us move poles off his farm. A public road ran through his farm, but now it has been changed to go around. We did not have the consent of the person who owned the land. At the time we built our line he did not make any objection, but sold it to another party, and he wants to make us move our poles since the public road has been changed. We have a privilege from the county court to build lines on any public road in the county. Can this party make us move poles without paying us the cost of changing? J. G. R.

THE permission that the farmer gave you to put two poles on his land amounts in law to a license. It is a disputed question whether a license which is accepted and acted upon by the expenditure of money in reliance upon it is revokable at the will of the person granting it or not. Some courts hold it to be revokable and some non-revokable. W. U. Tel. Co. vs. Pa. Tel. Co., 129 F., 849; 68 L. R. A., 968. In other cases a license is held not to be a vested right. Redfield Tel. & Tel. Co. vs. Cye., 49 A., 1047. The cases in which the license has been held to be non-revokable were all where the permission was put in writing, executed with the formalities of a deed. We believe that under the circumstances of your case, the court would hold that the license was revokable, and that the land owner might require you to move your poles off his land in the case your mention. You did not state that you paid anything for the permission to build on his land, so we assume that you did not.

In the case where the consent was not given except by silence and making no objection, the same rule would apply. The party to whom the consenting owner sold would stand in the same position so far as legal rights are concerned as the original owner. The question in this case therefore is the same as the question in the other and the same answer applies to both.

DULUTH COMPANY CLAIMS TAX EXEMPTION.

THE Duluth Telephone Company has commenced proceedings in the district court in that city asking that taxes and assessments for street improvements against some of its real estate be set aside. The company declares that it is a corporation existing under the laws of Minnesota, and as such is exempt from local taxes and assessments under the gross earnings tax law, adding that the gross earnings tax has been paid into the state treasury in compliance with the law. The company explained that the east half of the lot in question, though not occupied by a building, is necessary for the storage of poles and equipment, and has been used for such purposes only.

HOUSE MOVING ENJOINED AT HOUSTON, TEXAS.

THE Citizens Telephone Company of Houston, Texas, filed suit against J. Enger & Co. and the City of Houston asking that an injunction be granted to prevent the moving of a two-story house by contractors in such a way as to interfere with its wires. The temporary injunction asked for was granted.

It was conceded that defendant took the prescribed steps of consulting the city and depositing $25 to cover damages to wires, but it is claimed that the line of the company had already been crossed at three places, and that defendants proposed to carry the house beneath the wires and cables again, which would cost the company $50 in addition to its previous losses and put 100 telephones out of service for from six to ten hours.

The company claimed that it would be damaged to the extent of $500 and pleaded the constitution of Texas and the fourteenth amendment of the United States Constitution as a bar to such procedure, which it alleges would be the taking of private property without due process of law, and without just compensation. The company further offered to cut the wires and permit the passage of the house if the mover would guarantee to refund the expenses involved in doing this work.

CONTRIBUTION FROM COMPANY FOR DAMAGES RECOVERED FROM CITY.

AN action to recover $5,000, the amount paid by the City of Erie, Pa., to Barbara Mone, widow of Nicolas Mone, as damages occasioned by her husband's death, was brought by the City of Erie against the Mutual Telephone Company. In September, 1901, Peter Hoffman moved a house and barn up German street, having secured proper permit from the city authorities. When Hoffman reached the place where a certain guy wire belonging to the telephone company crossed the street, he found that it was in his way and accordingly took it down until the buildings were moved and then replaced it. He evidently did not fasten the wire securely, for it loosened and falling to the ground rubbed against high tension wires of the Erie Electric Light Company until the insulation was worn off, and became highly charged also.

Mone, a workman, while going to his work, was killed. His remains were found beside the loose wire with his hands and shoes burned off. Barbara Mone, his widow, brought action against the City of Erie for damages, and the city notified the Mutual Telephone Company to defend the action, but the telephone company refused. A verdict of $5,000 which the jury in the case awarded was paid by the city.

The suit by the city against the telephone company was finally settled by the company paying $2,500, or half the amount asked, after the jury had disagreed.

OPERATING DUPLICATE TELEPHONE EXCHANGES A CRIMINAL OFFENSE IN OKLAHOMA.

WORD comes from Guthrie, Oklahoma, that the Pioneer Telephone Company, a Bell corporation, was fined one hundred dollars and costs in the police court at El Reno for violating a city ordinance prohibiting one telephone company from operating more than one telephone exchange in the city. Evidence was introduced to show that the two exchanges now operating in El Reno were really under one management. The defense sought to prove that though really under the same management separate sets of books were kept, one for the Pioneer company and the other for the Topeka and El Reno company, recently absorbed by it. Employees who were called to the stand testified that they were employed some by one company and some by the other, but all received their pay from one manager. Bank checks were introduced in evidence which had been made payable to the Topeka & El Reno company, but endorsed by the Pioneer Company.

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QUERIES

REASON FOR "CONDENSER KICK."—(851.)

In testing on a common battery line to determine its condition with a voltmeter we can get a throw of the voltmeter needle upon connecting battery to the line. This I am told is a "condenser kick." I have noted that the kick is not as great on a single party line as upon a line on which there are several instruments. Inasmuch as I understand that each additional instrument across the line has just that much more of a shunt effect, I fail to see why we get a greater kick. It appears to me that, owing to the greater short circuiting effect, as much current would not go through the voltmeter, and consequently the kick would not be as great. Can you explain to me why this is? N. F.

In throwing your voltmeter battery on to the line, and getting a "condenser kick," as you say, we would call your attention to the fact that the kick is due to the capacity of the line and amount of current absorbed by the condenser in the instrument. Even though there were no telephones upon the line, you would still get a kick, owing to the absorption effect or capacity of the cable. However, when there is a condenser upon the line the capacity of the line is increased just that much, and naturally you will get a larger kick. Place more condensers in parallel and you increase the capacity, and so get a larger "kick." The effect on the needle is due to the amount of current absorbed by the line and then discharged back into the voltmeter; consequently the greater the amount of absorption the greater the amount of discharge.

DEFLECTION OF TANGENT GALVANOMETER.—(852.)

In testing with a tangent galvanometer I note that the deflection of the needle is not commensurate with the amount of battery applied to the circuit; that is, when I place two cells of battery in circuit with the galvanometer I secure a certain amount of deflection, but in placing four cells in circuit I do not obtain twice the deflection, nor do I in placing six cells obtain three times the deflection, but in each case the deflection drops below the multiple. Why is this? L. B.

This is due to the fact that as the needle of the galvanometer swings out, or swings at a tangent to the lines of induction, it is not affected by as many, and consequently the deflection is correspondingly smaller.

In constructing tangent galvanometers it is customary to make

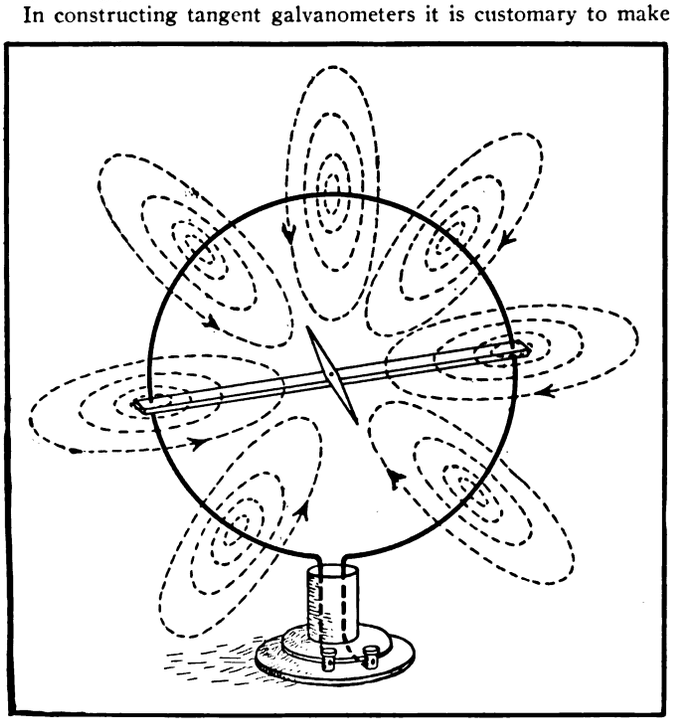

Fig. 852-a.

the needle very small in comparison with the diameter of the field in order that it may at all times be within that portion of the magnetic field having the greatest density. Evidently your needle is large in comparison with the field diameter, and consequently swings out of the portion having the greatest number of lines of force. This is exemplified in the theoretical sketch

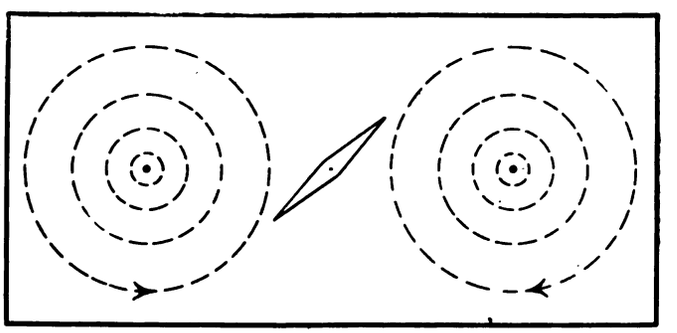

Fig. 852-b

shown in figures 852*a* and 852*b*, which roughly show the position of the needle in the magnetic field. The lesser density of the field near the center of the coil, that is to say, as the pivot of the needle is approached, is indicated by the greater distance between lines representing the magnetic flux.

UNDERWRITERS' RULES FOR WIRING.—(853.)

The writer understands that there are some rules specified by the National Board of Fire Underwriters appertaining to the method which must be used in the installation of telephone lightning arresters, but is unable to find these rules. If you will kindly favor him with the same you will greatly oblige. P. R. G.

The rules as provided by the National Board of Fire Underwriters for the installation of telephone lightning arresters are under the head, "Installations where the current carrying parts of the apparatus installed are not capable of carrying indefinitely a current of ten amperes," and are to the effect that the line must be provided with an *approved* protective device located as near as possible to the entrance of wires to building.

The protector must not be placed in the immediate vicinity of easily ignitable stuff, or where exposed to inflammable gases or dust, or flying of combustible material.

Wires from the entrance to building to the protector must be supported on porcelain insulators, so that they will come in contact with nothing except their designed supports.

The ground wire of the protective device must be run in accordance with the following regulations:

1. It shall be of copper and not smaller than No. 18 B. & S. gauge.

2. It must have a perfect rubber insulating covering.

3. It must run in as straight a line as possible and to a good, permanent ground. This may be obtained by connecting to a water or gas pipe, connected to the street mains and in service, or to a ground rod or pipe driven in permanently damp earth. When connections are made to pipes preference is to be given to water pipes. If attachment is made to a gas pipe the connection in all cases must be made between the meter and the street mains.

In either case the connection must be made as near as possible to the earth. When a ground wire is attached to water or gas pipes the pipes should be thoroughly cleaned and tinned with rosin flux solder, if such a method is practicable. The ground wire should then be wrapped tightly around the pipe and thoroughly soldered to it.

When the above method is impracticable, then, if there are fittings where a brass plug can be inserted, the ground wire should be thoroughly soldered to it. When the ground wire is attached to a ground rod driven into the earth the ground wire shall be soldered to the rod in a similar manner. Steam or hot water pipes must not be used for a protector ground.

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IN THE OPERATING FIELD

MICHIGAN MANAGERS TO MEET AT OWOSSO.

ON April 16 the executive committee of the Independent Telephone Managers' Association of Michigan met at Owosso and prepared a program for the next meeting of members. In arranging for the papers the central idea was to have a program which applies directly to the operating side of the business, and which will particularly appeal to the women engaged in telephone work.

The next meeting, to be held at Owosso on May 8 and 9, is therefore to be a sort of ladies' convention, and Mr. H. T. Clough, the secretary, says "every member of the association who has a wife is expected to bring her, and if he is not provided to hurry up a little bit and get one."

The general managers of the several companies have been requested to make it possible for chief operators and other lady employees to attend the convention. The program is as follows:

WEDNESDAY, MAY 8, 2 P. M.—First Section of Program: "The Operating Room."

Address of welcome—Hon. Dr. D. H. Lamb, Mayor.

Response and opening address—Mr. F. V. Newman, president.

The Chief Operator—Miss Margaret Heney, chief operator, Owosso, Mich.

Discipline and Deportment of Operators—Miss Fannie Hiddie, chief operator, Grand Rapids, Mich.

Information Department—Miss Amelia Kowlski, chief operator, Ann Arbor, Mich.

The Merit System with Operators—Mr. C. E. Smith, manager, Cadillac, Mich.

Service Reports—Mr. H. W. Sexton, wire chief, Owosso, Mich.

General discussion of all papers.

THURSDAY, MAY 9, 8.30 A. M.—Second Section of Program: "Toll Work."

Through Business—Mr. B. L. Carson, manager, Bay City, Mich.

General Handling of Toll Business—Miss Inez E. Close, manager, Pontiac, Mich.

Following Up Unfinished Toll Tickets—Mrs. Florence R. Gould, chief operator, Battle Creek, Mich.

Co-operation Between Toll Operators—Miss Jessie D. Presley, manager, Belding, Mich.

Information on Toll Tickets—Mr. Geo. F. Stratemeyer, traffic manager, Grand Rapids, Mich.

General discussion of all papers.

The program of Wednesday will be followed at 6:30 P. M. with a dinner, after which there will be speaking and toasts and an informal dance.

TEXAS LEGISLATION.

BY CHAS. F. SPEED.

THE Legislature of Texas got somewhat ambitious this session and introduced a number of bills affecting the telephone business. So important was the proposed legislation, that the Texas Independent Telephone Association advanced its annual meeting thirty days in order that proper action might be taken.

The association appointed Mr. J. B. Earle, of Waco, as committeeman in charge, with instructions to appoint his assistants. He named Mr. J. E. Boynton, of Waco, and Sidney L. Samuel, of Fort Worth, two of the brightest and most successful attorneys in Texas, both of whom, fortunately, are interested in Independent telephone development.

That the committee was exceptionally strong is shown by the results obtained, which were far beyond the expectation of any one. They proceeded along educational lines, believing that if the members of the Legislature could be fully informed as to the true situation no harm would be done the Independent cause.

The first bill requiring attention was the well-known physical contact measure requiring interchange of business between the Independents and the Bell Co. This was a Democratic platform measure. How it got there no one knows, but there was a demand that platform measures be passed. The committee acted wisely in getting a harmless substitute bill approved by the Legislative committee, and then arranged for riders on the bill in the form of amendments to be introduced should the bill come up for passage, making the bill less effective. Then it required hammering from all sides to make the Legislature lose interest in the bill, with the result that it was never called from the committee.

The next bill requiring attention regulated the rates of exchanges in towns of different sizes, the effect of which would have been to reduce the rentals in many towns and cities. The Bell Company had more to lose by this bill than the Independents, but these same Independents are growing rapidly in Texas, and will soon occupy so prominent a position that they were interested in proving to the Legislative committee the effect of such a measure. This was done with such force that the bill never left the committee room.

The third bill stirred up the whole State, it being a tax of 3 per cent. on gross receipts. To prevent the passage of this bill letters were sent out to every exchange owner requesting that his representative be informed as to the true situation, and it is enough to say that the chairman of the legislative committee says he had no idea there were so many telephone companies in Texas. The members are now better informed, and have no desire to pass any bills unfavorable to the encouragement of the Independents.

The association committee has done its work well and accomplished results which will be far reaching, and the association will be stronger as it becomes known what can be accomplished by the combined efforts of its members as an association.

Notwithstanding the present strong sentiment against the physical connection measure, the Governor has called an extra session, in which, among other things, he demands that a bill be passed requiring telephone companies to connect. This is regarded as a serious mistake, as the telephone systems of Texas are as yet not sufficiently developed to serve the needs of the people, and the present bill is directly contrary to the public interests.

REMARKABLE ATTITUDE TAKEN BY CENTRAL UNION (BELL) COMPANY TOWARD LOCAL BUSINESS IN INDIANA AND OHIO.

STATEMENTS are rife in the states of Indiana and Ohio that the Central Union (Bell) Company is meeting with such poor success in local business, owing to its having been so thoroughly outstripped by the Independent exchanges, that it is anxious to give up this branch of its business wherever it has fallen behind, and confine itself exclusively to carrying toll messages.

It is said that W. P. Sylvan and J. L. Putnam, sub-license agents of the Central Union Telephone Company, have, in connection with this matter, made verbal offers to sell or lease the Central Union local exchanges to Independent companies in Fort Wayne, South Bend and a number of other localities in Indiana where the Independent companies are very much in the lead. The proposition they are reported to have made is to enter into an arrangement whereby the long distance business will be divided on a percentage basis, the Independents to retain the use of such long distance lines as are now in operation, while for points to which they have no long distance lines the

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toll business is to be turned over to the Central Union lines in consideration of the closing of its local exchanges.

In Indiana these two men have been invited to meetings of Independent telephone men to announce their proposition publicly, and have been asked to put their proposition into writing, but both of these things they have declined to do. Their plan is to single out an officer or manager of an Independent company, and make the proposition verbally.

Considerable interest has been aroused in Indiana by these movements, and the result has been a discussion of the question at two recent district conventions, and a conference at Fort Wayne, held on April 19, which was attended by representatives from several of the most prominent companies in the northeastern part of the State. At this convention managers and officers from the Logansport, South Bend and Fort Wayne Independent companies stated that the proposition had been made to them by Messrs. Sylvan and Putnam. After a discussion of the proposition it was decided that no individual company nor district branch of the association should take any action on the proposition by itself, but that all information gathered should be referred to the State meeting, which is to be held in Indianapolis in May. Representatives of the Ohio association will also be present at this meeting. President Lindemuth, of the State association, has called a meeting of the executive committee in Indianapolis, on April 27, to confer with the officers of the Central Union Company, and learn from them, if possible, whether or not the proposition made by Sylvan and Putnam is authorized, and get any further details which may be given out.

In Indiana the Independents believe that the Central Union is "up against it." Its local business in many localities has fallen far below a paying basis, and something must be done to save the company from ruin.

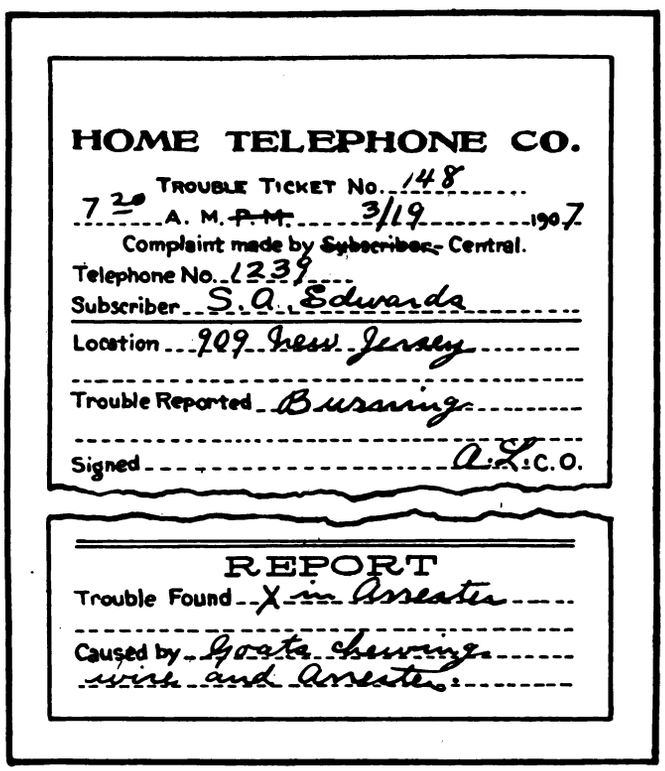
In Ohio the Bell people are announcing the progress of negotiations for transferring the Bell exchanges at Delaware, Bucyrus and Marion to the Independents, with the contingent agreement that Bell toll lines shall be used. Although it has been announced in some quarters that the deal covering these three places has been perfected, President Frank L. Beam, of the Ohio Independent Telephone Association, writes, under date of April 23, that "neither of these companies has closed any contract of any sort with the Central Union or Bell interests, and will not, except it be through the medium of the State organization. The proposition made in the course of these negotiations has, by each of the companies mentioned, been referred to the State association, and no action will be taken by these companies, or by any Independent company in this State, except it be in conjunction with and with the advice of the representative organization of the Independent telephone interests of Ohio, that is, the State association."

This shows conclusively the attitude taken by the Independents, who are holding together strongly in spite of the fact that in these three cases, and probably in others, negotiations were started secretly, and a determined effort made to bring them to a conclusion with as little publicity as possible.

That the Independents of Ohio are thoroughly in control of the local situation is shown by the statement of President Beam in the same letter, to the effect that a carefully prepared and reliable collection of statistics recently made shows that on March 31 the strength of the Independents in Ohio, outside of Cincinnati, which is still a non-competitive point, was represented by more than 298,000 telephones installed, as against 141,000 claimed by the Bell people, including Cincinnati, where they have 42,000 telephones.

A REMARKABLE TROUBLE TICKET.

THE accompanying illustration is a reproduction of part of an actual trouble ticket which was formerly included in the records of the Home Telephone Company, of Mobile, Ala. E. H. Davidson, the wire chief, who is authority for this news, furnishes the information that the arrester was mounted


HOME TELEPHONE CO.

Trouble Ticket No. 148

7 20 A. M. ~~P. M.~~ 3/19 1907

Complaint made by ~~Subscriber~~ Central.

Telephone No. 1239

Subscriber S. A. Edwards

Location 209 West Jersey

Trouble Reported Burning

Signed A. L. C. O.

REPORT

Trouble Found X on Arrester

Caused by Goats chewing wire and Arrester

Reproduction of a Part of Trouble Ticket Record.

outside, and together with the attached wire, was a morsel too tempting for resistance, either to the appetite or curiosity of a stray goat.

That the goat was a beast of very unusual intelligence is shown by the nature of the trouble indicated at the switchboard. The burning of the line lamp shows that he had crossed the wires, so that he could enjoy his meal undisturbed by any ringing current which the operator or wire chief might throw on the line.

THE WORTH OF A MAN

lies not so much in that which he has memorized, but in his ability to readily secure the information he desires. AMERICAN TELEPHONE JOURNAL *keeps in touch with a staff of telephone men, each an authority in his particular line, who are ready and willing to give you the information you desire in response to all questions on practical telephone work. Why? Because anything that helps a single telephone man helps the business, indirectly perhaps, but nevertheless it helps. Here is a motto for you, "When in doubt write the Editor of* AMERICAN TELEPHONE JOURNAL, *100 William St., New York."*

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250 Type E central energy desk telephones with stationary head, corrugated nickel-plated pedestal, black enamel metal base, bipolar receiver, gold electrode transmitter.

1,000 No. 204 desk telephones with adjustable transmitter, knuckle joint arm, nickel-plated pedestal and base, same transmitter and receiver as above.

100 Type C. E., latest style desk telephone with No. 4 transmitter, all rubber bipolar receiver, black rubber pedestal, nickel-plated base, induction coils at end of cord instead of in base. A modern instrument.

1,000 Former type ZZ, later known as No. 37, business style central energy wall telephones complete with triplet set consisting of combined switch-hook, transmitter with adjustable arm, bipolar receiver, etc. This instrument is provided with shelf.

100 Former type Z. later known as No. 35, residence style, central energy wall telephone without shelf, otherwise same as No. 37.

These instruments are in good condition and will be sold at a reasonable figure. Prices will be furnished upon application to W. F. LAUBACH, Manager, Akron People's Telephone Co., Akron, Ohio. 822

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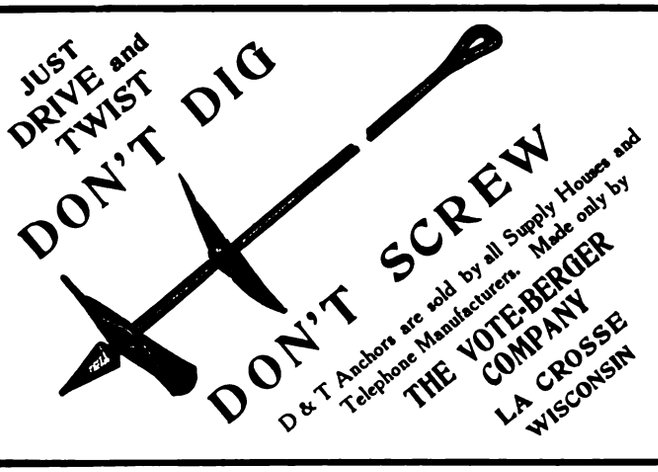
WANTED.—The management of an electric light plant where the business can be built up. Have had experience and can "deliver the goods" on any electric lighting proposition. Open for engagement after July 1, 1907. Address Box 816, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 816

WANTED.—Competent man as superintendent, also first class switchboard repair man. Good salary for first class man. None other need apply. Address, Box 821, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 821.

WANTED—Competent cable splicer. Position permanent. Send references. Address, Zenith Telephone Co., Duluth, Minn. 809

WANTED—Experienced local cable and switchboard wiremen for factory work. Call or write, giving experience. Automatic Electric Company, Morgan and Van Buren streets, Chicago, Ill. 820



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TELEPHONE PATENTS

TELEPHONE TRUNKING SYSTEM.

Harry C. Goldrick, Indianapolis, Ind., patents (No. 845,077; dated Feb. 26, 1907; filed Sept. 17, 1902; serial No. 123,696) and assigns to Kellogg Switchboard and Supply Company, Chicago, Ill., a telephone trunking system.

This patent covers a trunking system operative between two telephone exchanges of the two and three wire types, respectively. The connections are made in the manner usually employed, whereby the operator desiring connection with a subscriber of another exchange throws her talking set in on an order wire and makes her desire known to the B operator, who assigns a trunk with which to connect and then completes the connection by inserting the plug attached to the B end of the trunk in the proper jack of her multiple.

TELEPHONE FOR THE DEAF.

Lewis F. Clarke, Boston, Mass., patents (No. 849,353; dated April 2, 1907; filed Feb. 13, 1907; serial No. 357,154) and assigns to Globe Ear Phone Company, Boston, Mass., an electric ear-phone.

This invention comprises a transmitter attached to a pocket battery so that it may be readily slipped into the coat pocket. A receiver of the watch-case type is connected by a flexible cord.

TELEPHONE TRUNKING SYSTEM.

Francis W. Dunbar, Chicago, Ill., patents (No. 847,984; dated March 19, 1907; filed August 25, 1902; serial No. 120,878) and assigns to Kellogg Switchboard and Supply Company, Chicago, Ill., a telephone trunking system.

This invention relates to a trunking system between exchanges of the two-wire type. At the outgoing office the subscribers' lines are provided with cut-off relays and with test terminals connected in local circuit, and the subscriber's bells are grounded from one side of the line. The operator's cord circuits connect inductively with the subscriber's lines through a repeating coil which has connected to it at an intermediate point a supervisory relay legged to ground through a central battery.

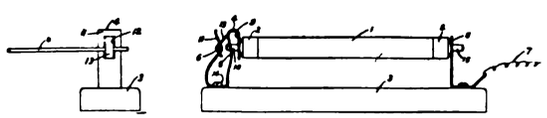
At the incoming office the subscribers' lines are provided with cut-off relays actuated over a portion of the talking circuits and the testing contacts of the jacks are connected directly with one side of the talking circuits.

The method of operation of the trunk circuit is that usually employed.

FUSE CLIP.

Frederick R. Parker, Chicago, Ill., patents (No. 849,159, dated April 2, 1907; filed March 14, 1906; serial No. 306,037) and assigns to Frank B. Cook, Chicago, Ill., a fuse clip.

This device comprises a single piece of spring metal so



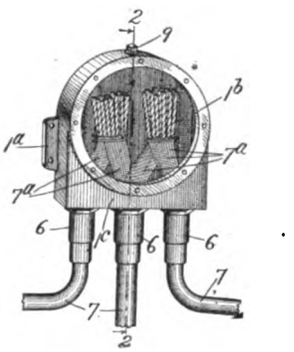
shaped as to clamp both the fuse terminal and the circuit wire in place, thereby connecting the one to the other.

The terminal spring 4 is made of a single leaf spring formed with holes through the portions 8, 9 to accommodate a spindle 10 of a fuse terminal 2, which is securely clamped in place when the opposite end of the fuse is pressed in place in the terminal spring 5. The turned up portion of the spring 4 is slotted and a tongue 13, cut from the spring 4, extends therethrough, so that the conductor 6 when placed between the spring portion 11 and the tongue portion 13 may be securely retained.

JUNCTION BOX.

Henry E. Procunier, Oak Park, Ill., patents (No. 848,047; dated March 26, 1907; filed Feb. 6, 1905; serial No. 244,315) an electric cable splicing and distributing box.

This patent describes a junction box for cables in which



taps may be taken in various directions from another cable. It comprises a box of metal made in a single piece aside from the cover having lugs 1a, 1a, by means of which it may be attached to a pole or other support, and a plurality of nipples 6, 6, 6, providing entrance for the cables. The upper portion of these nipples is provided with an enlarged cavity, leaving room about the cable for solder, lodged in an annular deposit within the upper portion of the cavity, to run down when melted by the application of heat to the nipple, and by uniting with the lead sheath form an air-tight joint. The pocket 1c may then be filled with paraffin as additional protection, and the cover applied with an air-tight packing between its flange and that of the box.

WIRE GRIP.

Vassel W. White, Utica, New York, patents (No. 843,921; dated February 12, 1907; filed September 29, 1906; serial No. 336,680) a wire grip.

This patent covers a form of wire grip for use in pulling wire to the proper tension on telephone lines or elsewhere. The description shows two parallel bars attached to two eccentrically mounted levers to the outer ends of which are fastened the ends of a chain. When a pull is exerted on this chain the levers cause the clamps to move toward each other, tightly gripping the wire between them.

TELEPHONE TRUNKING SYSTEM.

Harry G. Webster, Chicago, Ill., patents (No. 847,385, dated March 19, 1907; filed August 1, 1902; serial No. 117,920) and assigns to Kellogg Switchboard and Supply Company, Chicago, Ill., a telephone trunking system.

This invention relates to a trunking system similar to that described in application of Francis W. Dunbar, filed August 25, 1902, serial No. 120,878. In this patent, however, the A cord

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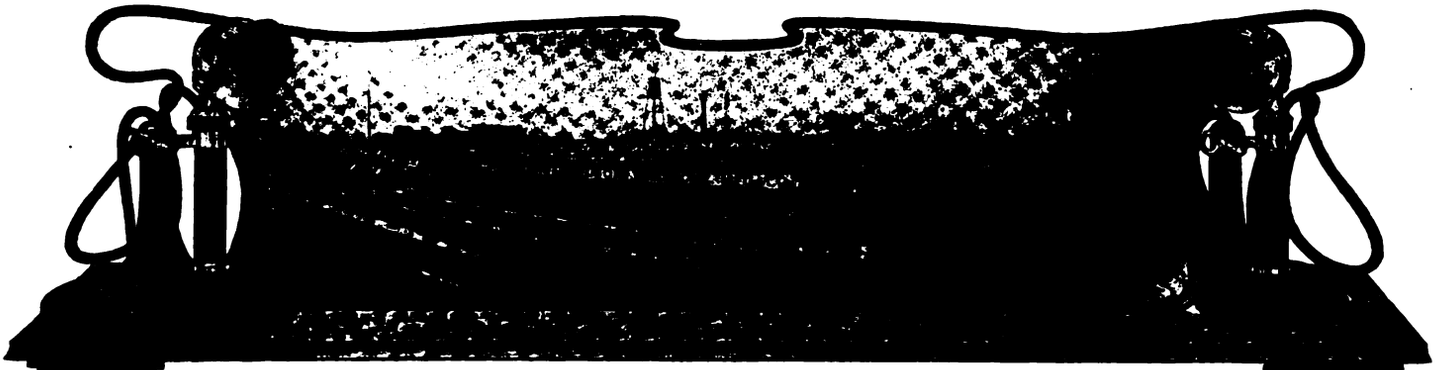

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PATENTS—Continued

circuit is provided with batteries bridged across each end, one pole of which is grounded, and the trunk relay at the incoming end of the trunk is normally legged to ground from the tip side of the trunk, the metallic circuit of the trunk being at the same time open. There is a relay which operates when the called subscriber answers to disconnect the trunk relay during conversation and to complete the metallic circuit of the outgoing end of the trunk, instead of using the repeating coil arrangement as shown in the application of Mr. Dunbar.

TRUNK CIRCUIT.

Joseph Beryl Kelly and Edwin Bowen Heaford, Omaha, Neb., patent (No. 848,749, dated April 2, 1907; filed December 31, 1906; serial No. 350,302) a trunk circuit for telephone systems.

This patent covers a two-wire, one-way trunk circuit for use between a local and a toll switchboard. A lamp is used for attracting the attention of the toll operator. It is controlled from battery in the local cord circuit, flowing through a relay bridged across the trunk, and put out, when the toll operator answers, by the operation of a relay inserted in one side of the trunk, shunted by a non-inductive resistance. In the other side of the trunk is a relay of similar dimensions, balancing the circuit and connecting across the trunk an impedance coil, to operate in shunt with an impedance coil bridged across the toll cord circuit, the supervisory signal at the local position.

MEMORANDUM DIRECTORY.

Charles E. Napp, Trenton, New Jersey, patents (No. 845,703; dated Feb. 26, 1907; filed Jan. 3, 1906; serial No. 294,433) a telephone directory or book.

This patent covers a form of memorandum telephone directory comprising two plate covers enclosing, on one side, a series of cards alphabetically indexed, upon which may be placed the names, telephone numbers, etc., of the persons with whom the subscriber has frequent communication, thus obviating the necessity of searching the directory furnished by the telephone company for the number.

On the other side is fastened a memorandum pad.

TELEPHONE TRUNKING SYSTEM.

William W. Dean, Chicago, Ill., patents (No. 848,814, dated April 2, 1907; filed July 26, 1902; serial No. 117,059) and assigns to Kellogg Switchboard and Supply Company, Chicago, Ill., a telephone trunking system.

This patent covers a form of trunking system for connecting lines of the Dunbar or two-wire type with lines of a different type, a feature of which is the provision of means for placing the signaling apparatus associated with a trunk in condition to operate by current flowing over a circuit entirely independent of the ground connections which may exist on a subscriber's line.

AUTOMATIC TRUNKING DEVICE.

August Alvin Monson, St. Paul, Minn., patents (No. 848,120; dated March 26, 1907; filed November 27, 1906; serial No. 345,316) an automatic trunking device and selective signaling apparatus.

This patent covers a device to connect a number of outlying subscribers to a central point (which may be a distributing pole) and then connect this central point to a trunk line to the central station. A selective mechanism is placed at the subscriber's station, so arranged that the converging point of these lines, or the branch central, as it is termed, is partly under the control of the subscriber and partly under the control of the central station. The inventor aims to secure privacy by so arranging the selective mechanism that when any subscriber of the group connected may be using the line all of the others in the group are automatically cut-out of circuit. Further the inventor aims to have the device provided at the central office so operate that the operator may call any subscriber of a group connected to a branch central without disturbing the bells of the other subscribers.

TELEPHONE SYSTEM.

William W. Dean, Chicago, Ill., patents (No. 849,375, dated April 9, 1907; filed May 11, 1901; serial No. 59,876) and assigns to the Kellogg Switchboard and Supply Co., Chicago, Ill., a telephone system.

This patent covers a form of two-wire common battery telephone system employing the usual sub-station arrangement in which the removal of the receiver from its hook causes a flow of battery through relay 6, which is comparatively sensitive, to the leg of the line l^2, through the instrument, through line l^1 and the marginal relay 5, to battery B^1, which causes an actuation of the armature of the

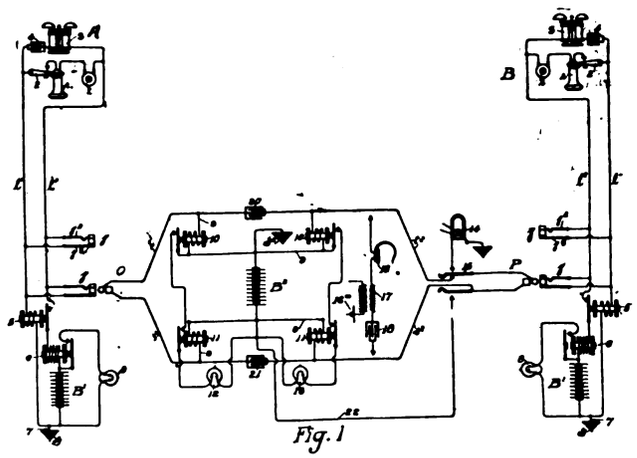

Fig. 1

relay 6. This closes the circuit in which is included the line signal 8. Upon insertion of the plug O into the jack j the flow of battery B^2 causes the actuation of the marginal relay 5, thus opening the circuit of the relay 6, and extinguishing the line signal 8. Relays 10 and 11 govern the supervisory signals 12 and 13 respectively and are operated by replacing the receivers upon the hooks while the plugs are in the jacks.

BATTERY BINDING-POST ATTACHMENT.

George H. Cove, Roxbury, Mass., patents (No. 842,771, dated January 29, 1907; filed November 26, 1906; serial No. 345,016) and assigns one-half to Frank R. Kimball, Boston, Mass.

This patent covers a form of U-shaped spring wire clamp that may be substituted on the battery connecting post for the nut usually employed. Lugs on the inside of the spring engage with the threads of the connecting post, holding the spring in place by means of the pressure exerted within itself. The wire is held securely by a double spring clamp, between the members of which it is inserted.

WIRE STRETCHER.

Oliver E. Lewis, Benson, Nebraska, patents (No. 845,102; dated Feb. 12, 1907; filed April 5, 1906; serial No. 310,114) a wire stretcher.

This patent covers a form of wire stretcher composed of a ratchet wheel and appropriate lever. The movement of the lever, causing the ratchet wheel to revolve, takes up, around lugs provided for the purpose, a flexible cable inwardly in both directions. This flexible cable has attached to it at one end some suitable form of wire clamp, in which the wire to be stretched is inserted.

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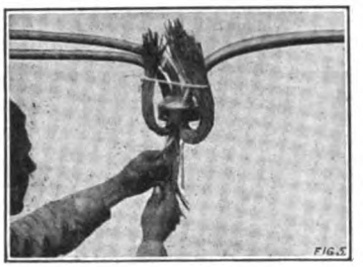

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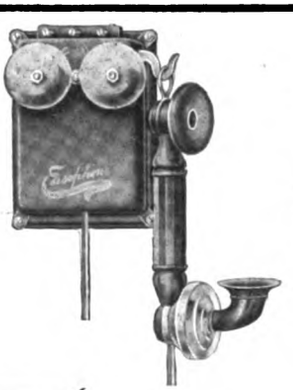


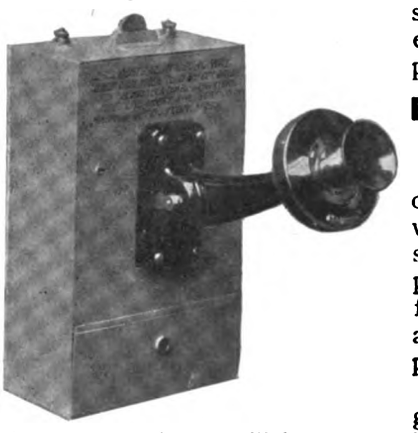
The Exchange Manager sees Lowest Maintenance Cost, Increase in Number of Subscribers, Demand for Hand Telephone.

Easophones

The WIRE and TELEPHONE COMPANY of AMERICA
ROME, N.Y.

LIVERMORE
ONE SLOT PAY STATION

not only relieves the public of performing mechanical labor, but goes a step further and obviates the necessity of the user even selecting the proper slot.



EVERYTHING IS AUTOMATIC

It has a few other new features which renders it superior to any pay station heretofore brought to the attention of telephone companies.

We are glad to give you information at once, but you'll have to wait a few weeks for deliveries.

WRITE NOW.

Livermore Pay Station Co.
4 BOWKER STREET
BOSTON, MASS.

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IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

PROMINENT TELEPHONE MAN ENDORSES NEW SOLDERING DEVICE.

BLAKE SIGNAL & MFG. CO., 246 Summer St., Boston, Mass., has recently received the following letter from the head of the telephone course at Purdue University:

PURDUE UNIVERSITY.
Winthrop Ellsworth Stone, Ph.D., President.

School of Electrical Engineering.

LAFAYETTE, Indiana, April. 11, 1907.

MR. E. J. BURKE, Pres., Blake Signal & Mfg. Co.,
246 Summer St., Poston.

Dear Sir—We have been using the sample of your tube flux in the telephone laboratory and have found it very convenient. Your idea of placing the compound in this form is certainly to be commended. We are daily doing more or less soldering, and the ordinary stick flux does not last long, due to waste. You have made a decided advance. Yours truly,

(Signed) ARTHUR BESSEY SMITH.
Dept. Telephone Engineering.

As this testimonial to the value of the tube flux was entirely unsolicited and Prof. Smith is a man who has passed through all the various branches of practical telephone work, the Blake Company is very much pleased with this statement as to value of its product. There are a number of important advantages in the use of this tube flux which the company will be pleased to explain in detail to those who are interested.

AMERICAN ELECTRIC FUSE COMPANY, Muskegon, Mich., in order to make clear its position in respect to the patent decision, announced in the April 13 issue of THE AMERICAN TELEPHONE JOURNAL, has written as follows:

"Inasmuch as this is a matter affecting our interests, we ask that the enclosed statement be printed under our name. We do not wish to conduct any controversy in your columns, but simply to set forth our position in this matter."

The statement is as follows:

"An interference proceeding in the patent office between Frank B. Cook and William Kaisling, we are informed, has been decided in favor of Frank B. Cook. We beg to advise the trade that we were not parties to this interference proceeding and were not represented by attorneys. William Kaisling has attempted to sell out his rights and patents to Frank B. Cook and has assigned his patents, application for patent and contracts with us, to Frank B. Cook. This was all done without any notice to us and without consultation with us in any way. Our attorneys advise us that our rights are not in the least degree affected by this interference decision or by the purported sale by Kaisling to Cook.

"We beg to assure all our customers that our rights are not affected in the least degree, inasmuch as we were not parties to this proceeding, and that we will protect and defend all customers on all apparatus furnished by us, either in the past or in the future."

THE NEW WESTINGHOUSE STORAGE BATTERY.

AFTER long experimenting and careful tests, the Westinghouse Machine Co., Pittsburg, Pa., has put upon the market a new storage battery. It is of the pure lead sulphuric acid type, the active material being formed from the pure lead of the plates by a Planté process with sulphuric acid as an electrolyte.

The type S-4 positive grid is illustrated at the left of Fig. 1, with vertical and horizontal cross-sections, and from this illustration and others one may form an idea of a number of the novel features employed in the construction of this plate. The parts adapted to become active consist of the small units represented by dark lines in the front view and horizontal section and these, of course, are pure lead leaves joined, at their ends only, to the round conductor ribs seen in the front view and in cross section in the left-hand sectional view. These conductor ribs are supported by the main stiffening ribs which surround the entire grid. These leaves are grouped in panels three to four inches square, dimensions varying with the particular size of the plate.

The entire plate including frame and leaves is of chemically pure lead, compressed into a homogeneous piece without any joints or welds. Upon the laminated surface is formed, from the lead itself, the peroxide of lead which furnishes the active material. Each lead leaf is transformed into a lead core which serves as a conductor for the current generated in the surrounding covering of active material. The core of pure lead in the plate, as put upon the market, is sufficiently large to furnish active material to replace the

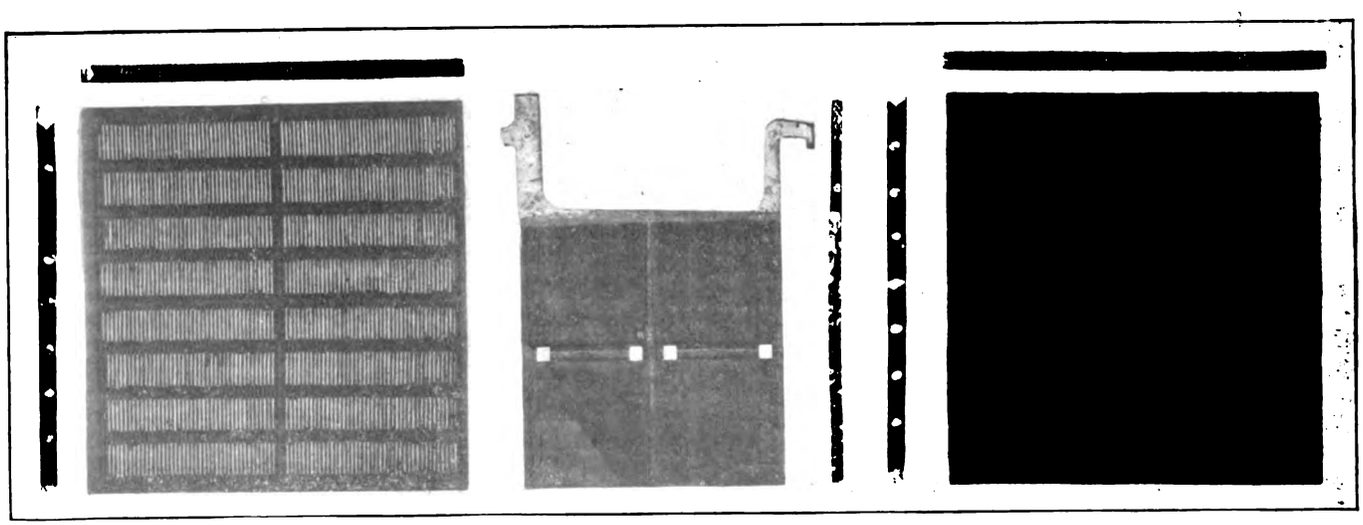

Fig. 1. Westinghouse battery—positive grid, type S-4, showing supporting structure, and lead unit leaves. *Positive plate of the new battery, showing entire supporting and conducting structure.* *Small positive plate, not provided with expansion openings, increase in size being taken up in beaded supports.*

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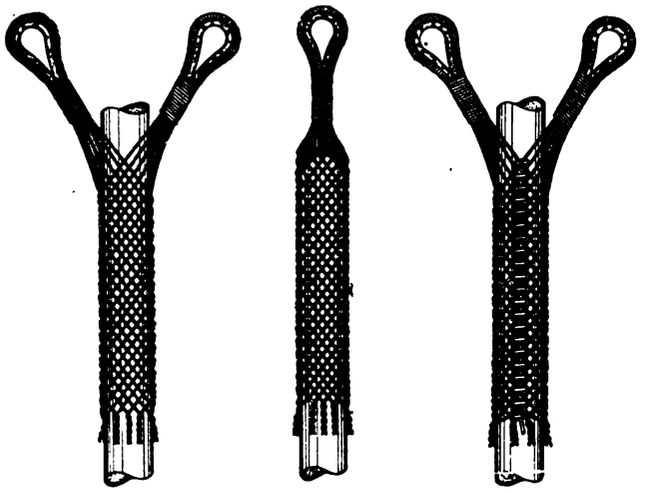
Indispensable for the economical handling of underground and aerial cables.

Will not cut the sheath. More readily adjusted than rope slings, marline or other grips. Saves its cost on every section of cable laid.



Cable pulled out, slack pulled in, or cable broken at mouth of duct pulled out rapidly and without trouble.

It is necessary only to get acquainted with this time and labor saving device, to appreciate its worth.

Get our prices and literature. Free on request.

Universal Cable Grip Company

P. O. BOX 390 .·. .·. .·. SYRACUSE, NEW YORK

Fort Wayne Electric Works

"WOOD" SYSTEMS

Installation of Telephone Booth Fan Motor.

Can You Hear

the man at the other end of the line just as well, when the fan is running in a telephone booth? You can if it's a Fort Wayne Telephone Booth Fan Motor—They're noiseless. This is no idle statement—It's a fact and we want to show you. Shall we? Just write us.

Other Sales Offices | Main Office FORT WAYNE, IND. | In Most Large Cities

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Fibre Conduit

FOR UNDERGROUND SYSTEMS

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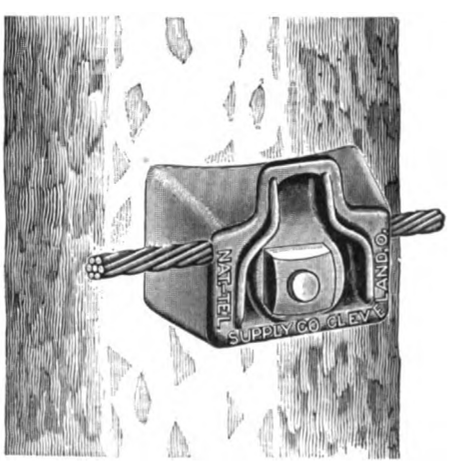
PIERSON, ROEDING & CO.

SAN FRANCISCO, CAL. LOS ANGELES, CAL. SEATTLE, WASH.

Non-Breakable Messengers

HANGERS



HOT GALVANIZED

No experiment. They have been tried out and are being used to-day in all parts of the United States and Canada.

National Telephone Supply Co.

3923 Superior Avenue, Cleveland

That advertiser has much to learn who is deterred from advertising in a medium because he does not like its policy—its religion or its politics.—*Printers' Ink.*

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loss due to the wearing away of peroxide which drops to the bottom of the cell and still provide ample conductivity during the entire life of the battery.

The space between the surfaces of adjacent leaves was determined by a consideration of the fact that the volume of lead peroxide is about twice the volume of lead from which it is made. Space must therefore be provided to accommodate all lateral expansion due to the increase in volume of the small units. Each of these units tends not only to expand laterally, but also to increase in length and this increase in length is provided for in a four panel plate by rendering top and bottom leaves slightly bow-shaped. In larger plates, adjacent panels are connected by a thin corrugated sheet. At each end of this expansion sheet is provided a rectangular opening, separating it from the vertical conductors. These rectangular openings, in addition to allowing all vertical growth to be taken up by the expansion sheet, allow the electrolyte to pass freely through the plate, thus equalizing its density on both sides, and promoting uniform working of the cell.

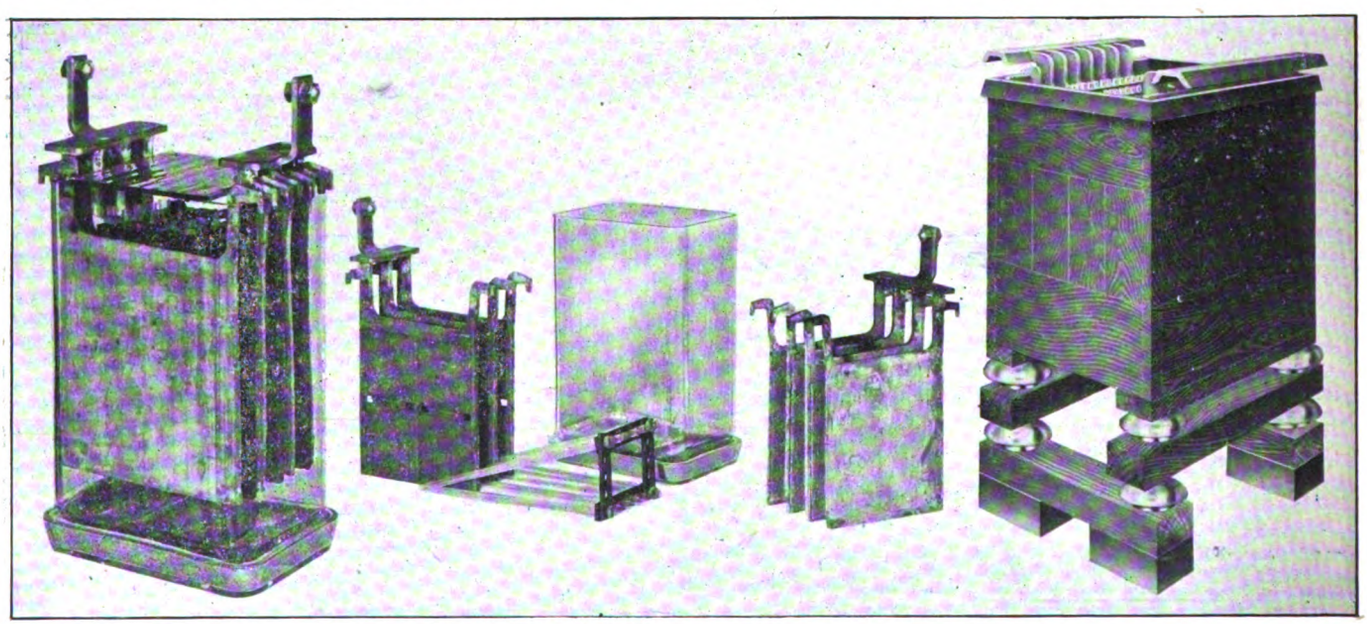
These elaborate provisions for taking care of any increase in volume in the Westinghouse plates are believed by the company to allow no room for defects due to buckling. Liability to this fault is also prevented by the fact that, owing to the slotted construction and short length of each of its leaves, every unit is independent of its neighbor, surrounded by electrolyte, and carries only that portion of the current which is supplied by its own peroxide. This gives a uniformity of distribution which allows a discharge to be carried on at a high rate, if necessary, without injury to the plate.

The negative plate is similar to the positive plate except that there is approximately thirty per cent. more active material provided by an increased number of laminations. As no longitudinal growth occurs in the negative plate, the expansion spaces are omitted. By providing a relatively greater volume of active material in the negative plate, the company expects to overcome the difficulties due to the shrinkage which brings about a gradual decrease from the original capacity of new Planté plates.

The Westinghouse Machine Co. has only brought out this battery after years of study and most careful investigations into the properties of different types of storage battery elements. It is prepared to furnish cells for all classes of work and has devoted careful attention to the development of cells and mountings particularly adapted to telephone work. Descriptions of the new battery covering technical features, standard sizes, etc., will be sent free of charge to interested telephone managers and engineers upon receipt of a request.

The National Conduit & Cable Co., 41 Park Row, New York City, in the last issue of its folder, *"Copper Gossip,"* traces the condition of the copper market for the past month and gives comparative tables showing prices in New York and London for the past 30 days and for the corresponding period last year. There is some other exceptionally interesting information in this number, which will be sent free of charge to anyone making a request.

Wesco Supply Co., St. Louis, Mo., and Fort Worth, Texas, in its April price list gives up-to-date figures on about everything that the telephone man can possibly use. It is anxious to let every manager see how the possession of this book will help him to save money, and will send it promptly to anyone who will mail a postal card asking for it.



General Views of Two Standard Types of the New Westinghouse Storage Battery Which Are Particularly Adapted to Telephone Work.

Sumter Telephone Mfg. Co., Sumter, S. C., has recently received what is not only a very good order but has the additional advantage of carrying a high-grade recommendation of the telephones made by this company. This order is for 600 wall sets and 200 desk sets to be used by the Signal Corps of the U. S. Army in this country and Cuba. The fact that these instruments which passed the government tests won the order, and are to be furnished, are standard wall sets, corresponding in every way to those which the company designates as its Five-fifty type and furnishes for the general trade, is an evidence of the value of this type of instrument. That the government is not alone in its approval of these sets is shown by the fact that the regular orders from telephone exchanges are keeping the assembling department of the company working overtime to fill them.

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Standard Vitrified Conduit Company

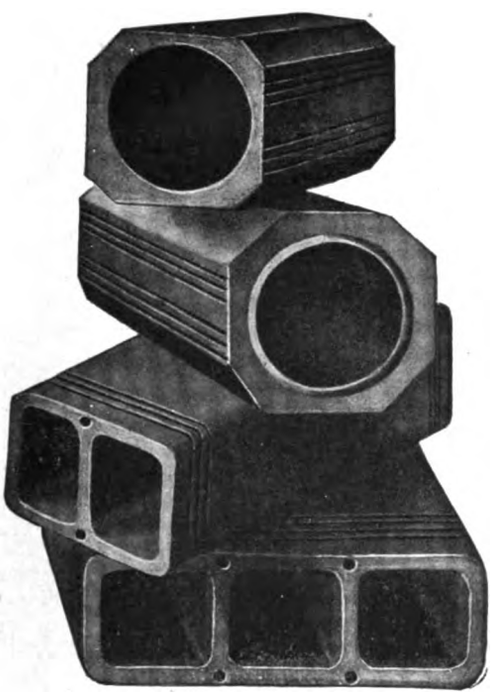
B. S. BARNARD, President.

MAIN OFFICES—39-41 CORTLANDT ST.—NEW YORK, N. Y.

MANUFACTURERS OF

MULTIPLE DUCT VITRIFIED CONDUITS

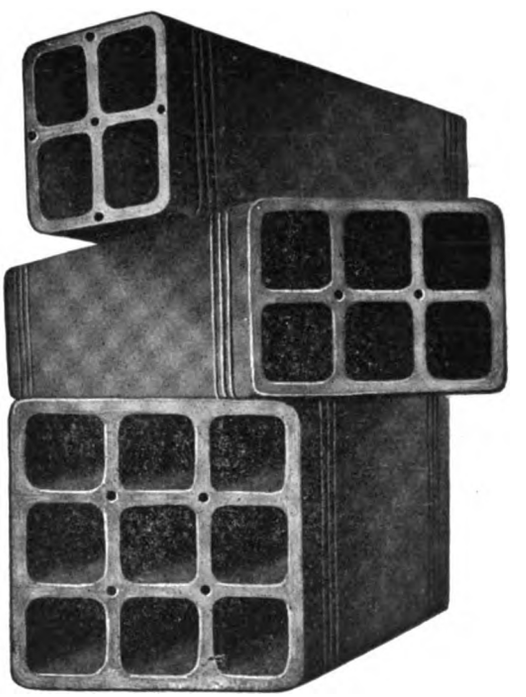
OUR FACTORIES ARE THE LARGEST IN THE WORLD
ANNUAL CAPACITY, 40,000,000 FEET OF CONDUIT



SINGLE DUCT
3¼ inch Round Bore
3½ " " "
4 " " "
3½ " Square "
3¼ " Round "
(Socket Joint)

MULTIPLE DUCT
2, 3, 4, 6 and 9 Duct
3¼ inch Square Bore
3½ " " "

MULTIPLE DUCT
2, 3, 4 or 6 Duct
3¼ inch Round Bore



OUR STANDARD MANDREL SUPPLIED FREE TO OUR CUSTOMERS

A few of the Big Contracts placed with us:

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Niagara Falls Power Co.
Charles E. Phelps, Jr., Baltimore, Md.
New York Edison Co.
Brooklyn Edison Co.
Philadelphia Electric Co.
Norfolk Railway & Light Co.
Montreal Light, Heat & Power Co.
Bell Telephone Co., U. S. A.
Bell Telephone Co., Canada
Pennsylvania R. R. Tunnel, N. Y. City
Trolley Tunnels, N. Y. City
Rapid Transit Subway, N. Y. City

ANNUAL CAPACITY:

40,000,000 Duct Feet

WRITE FOR CATALOGUE

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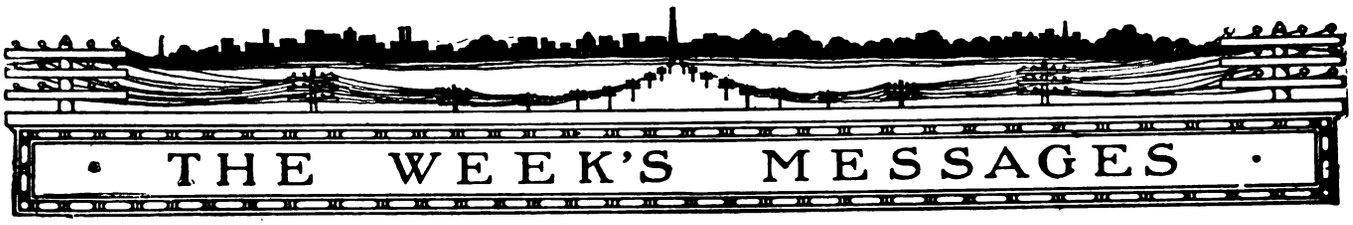

NEW COMPANIES.

EXETER, KAS.—An Independent telephone company has been formed at this city for the purpose of building a line from West Exeter to Oak Hill. F. A. Butler is the president.

GREAT BEND, KAS.—A charter has been granted to the Arkansas Valley Telephone Company, which is to build a line from Great Bend to Garden City. It is estimated the line will cost about $30,000.

ETNA, ME.—The Etna Telephone Company has recently been incorporated with a capital stock of $5,000, of which $530 has been paid in. The officers of the company are L. P. Toothaker, president; M. W. Toothaker, vice president; A. L. Sylvester, secretary and treasurer. The directors are L. P. Toothaker, O. Kelley, D. A. Sylvester, H. A. Friend and E. E. Carter.

ASHLEY, MICH.—An Independent telephone company, to be known as The Ashley Rural Telephone Company, has been organized. It is its intention to install an exchange at Ashley and construct a number of rural lines. The capital stock is placed at $10,000 in $20 shares, and the following officers have been elected: O. N. Fairbanks, president; Henry Kennett, secretary; Geo. Mitchell, treasurer.

CASS CITY, MICH.—The Cass City Telephone Company, which was organized some time ago, has filed articles of incorporation. It has an authorized capital stock of $5,000 and the Board of Directors is composed of the following members: J. C. Corkins, H. L. McDermott, B. F. Benkelman, J. D. Brooker and E. H. Bradfield.

COLD SPRING, MINN.—A rural telephone company, whose intention it is to construct a line from Cold Spring to Jacob's Prairie, has been formed, and connections will be made with the Minnesota Central Company.

HARRISON, MO.—A Farmers' Telephone Company has been organized at Harrison. It contemplates the erection of a line to Pilot Grove, at which place connection will be made with the Independent line being built from Blackwater.

ANDES, N. Y.—The Andes and Middletown Telephone Company, with a capital stock of $475, has been incorporated and the following directors named: J. T. Rooney, A. R. Wordon, Thomas Doig, all of Andes.

GILBERTSVILLE, N. Y.—Articles of incorporation have been filed by the Gilbertsville and Wellsbridge Farmers' Telephone Company, and the following officers elected: President, Clifford Wilber; vice president, John Stark; secretary and treasurer, Charles Ellis. The directors are C. F. Bushnell, Gilbert Leonard, Fred Church and C. C. Harris. Work on the plant is to begin at a very early date.

NORTHVILLE, N. Y.—An Independent telephone company is being formed in this city to build a line to Sacandaga Park.

RED HOUSE, N. Y.—The Seneca Independent Telephone Company, Red House, N. Y., has been incorporated with a capital stock of $10,000. Among the incorporators are Fred W. Gates, Sternberg, N. Y.; Robert W. Craim and Ira A. Gates, Red House, N. Y., and others.

BOTTINEAU, N. D.—Articles of incorporation have been filed by the Loop Mutual Telephone Company. It has an authorized capital stock of $8,000, and the incorporators are: Walter Minshull, Antler; R. F. Felton, R. A. Johnston, Haase; A. A. Lane, Sherwood; G. A. Esval, Sherwood; F. F. Bjornson and Frank Baska, Sherwood, N. D.

LEWIS, N. D.—The Lewis Mutual Telephone Company has been organized, and the following officers elected: Wm. Armor, president; F. E. Tennant, vice president; W. E. Shortrige, secretary; M. C. Bromaghin, treasurer. Directors: F. O. Johnson, of Tolley; A. E. Paulson, of Kenmare; A. P. Anderson and Wm. Armor, of Newport; F. E. Tennant, W. E. Shortrige, Fred Tunell, M. C. Bromaghin and Harry Frederickson, of Lewis.

CAPRON, OKLA.—The Capron Telephone Company has been incorporated with a capital stock of $7,000. The incorporators are F. J. Fash, W. D. Anderson and others.

CARMEN, OKLA.—Articles of incorporation have been filed by the Rich Valley Telephone Company, of Carmen. It has a capital stock of $1,000 and the directors are A. G. Melrose, E. Hughes and Walter Milam, of Carmen.

DRIFTWOOD, OKLA.—The Citizens' Telephone Company of this city has been chartered at a capitalization of $3,500 by J. W. Gass, W. E. Barkley and others.

BURNET, TEXAS.—The Smart Telephone Company, of Burnet, has filed articles of incorporation. The capital stock is placed at $10,000, and the incorporators are D. C. Reed, John McCarthy and C. Smart.

TOPSHAM, VT.—The Topsham Telephone Company has filed articles of incorporation and contemplates constructing and maintaining a telephone system in the towns of Topsham, Corinth, Newbury, Bradford, Orange, Groton and Ryegate. The central office is to be located at Topsham. The capital stock is given as $5,400, divided into three hundred shares, and the present stockholders are O. P. Dickey, East Corinth; J. P. Dickerman and E. Morrison, Groton; E. M. Hood, Topsham, and Geo. W. Merrit, Groton.

FUGATES HILL, VA.—Among the newly incorporated companies is the Russell Mentoda Telephone Company, of Fugates Hill. The capital stock is placed at $1,500 maximum, and $1,000 minimum, and the incorporators are J. C. Pruner, president; N. C. Fugate, vice president; T. J. Tate, J. E. Baker and others.

ORANGE, WIS.—The Badger Mutual Telephone Company, with a capital stock of $10,500, has been incorporated by G. B. Bailey, H. C. Abramson, H. J. Halberg and others.

PHILLIPS, WIS.—The Price County Telephone Company, Phillips, with a capital stock of $10,000, has been incorporated by R. L. Winchester, E. Vincent Covey, E. V. Winchester and L. A. Covey.

PORT WASHINGTON, WIS.—Articles of incorporation have been filed by the Port Washington Telephone Company. It has an authorized capital stock of $5,000, and the incorporators are W. B. Krause, Henry Holmes, A. H. Kuhl, J. W. Krause and J. H. Uselding.

COLDSPRINGS, ONT., CAN.—The Hamilton Township Rural Telephone Company, with head offices at Coldsprings, has been incorporated with a capital stock of $10,000.

STIRLING, ONT., CAN.—Articles of incorporation have been filed by the Stirling Telephone Company, Ltd., of Stirling. It has a capital stock of $10,000, and expects to construct, maintain and operate a telephone system within the county of Hastings and the townships of Seymour and Murray in Northumberland county.

FRANCHISES.

LOSTANT, ILL.—The Farmers' Mutual Telephone Company has been granted a franchise to operate in this city.

NASHVILLE, ILL.—Application for a franchise at Nashville has been made by the new Farmers' Telephone Company.

MORAN, KAS.—The Mutual Telephone Company which operates lines in Bronson, Elsmore, Savonburg and Humboldt is endeavoring to obtain a franchise in Moran.

VICKSBURG, MISS.—The Home Telephone Company, which has plants at Meridian and Hattiesburg, and which has been granted a franchise at Jackson, has applied for permission to construct and operate a telephone system at Vicksburg. If the company is successful it is its intention to install a plant of the most modern type to compete with the Bell Company.

NORTH YAKIMA, WASH.—The county commissioners have granted to the Cowichee Telephone Company, of Cowichee, the franchise for which it applied a few days ago.

FINANCIAL.

SOUTH BEND, IND.—At a recent meeting of the stockholders of the South Bend Home Telephone Company the regular semi-annual dividend of 1 per cent. was declared upon the stock.

WINTHROP, MINN.—At a recent meeting of the stockholders of the People's Independent Telephone Company the capital stock was increased to $50,000.

NORWICH, N. D.—The capital stock of the Norwich Telephone Company has been increased from $5,000 to $25,000.

FINDLAY, O.—The Findlay Home Telephone Company has increased its capital stock from $150,000 to $200,000.

NEWS—WANTED

THE matter contained upon the message and Operating Field pages of this paper is contributed largely by our special correspondents. We believe, however, that there are many valuable items of telephonic interest which are never brought to the attention of the public. There is no reason why this condition should exist, and the Editor, therefore, invites all telephone companies and the officials of such companies, to furnish any information that they can consistently make public relative to financial statistics, new construction, elections, franchises and personal items.

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To Prevent Trouble

and with no exposed metal parts in the circuit to

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from lightning while using the instrument. Send us your inquiry and we will "SHOW-U" at our expense an interesting proposition.

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FOR TELEPHONE MEN

This Cyclopedia contains more information on electricity and telephony than any other work published. It thoroughly explains all the duties of the manager, lineman, switch-board and troubleman. It not only fully explains the entire operation of a working telephone system, but it tells how to construct such a system. Treats fully on the Automatic Telephone and Wireless Telephony. Filled with information on electricity in all its forms—undoubtedly the best set of books for the telephone man who wishes to secure a fine position and a large salary.

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Five large volumes—2,500 pages—2,000 full page plates—size of books 7 x 10 inches—bound in three-quarters red morocco, fully indexed, Diagrams, Descriptions, Formulae, Sections, Tables—supplemented by practical test questions—prepared especially for practical men who have no knowledge of advanced mathematics.

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Telephone Instruments, Telephone Lines, Telephone Exchange, Telephone Operation, Automatic Telephone, Wireless Telephony, Magnetism, Measurements, Wiring, Telegraphy, Direct Current Dynamos and Motors, Electric Lighting, Railway Power and Lighting, Arc Lamp Development, Electrical Construction, Management of Dynamos and Motors, Power Station, Alternating Current Machinery, Power Transmission.

A 200 page handbook describing our course in Telephony and 60 other courses sent free if you mention American Tel. Journal.

AMERICAN SCHOOL OF CORRESPONDENCE

CHICAGO

MICHIGAN WHITE CEDAR POLES

We have a large stock of White Cedar Poles of all sizes, concentrated at a point on the D. & M. R. R. in lower Michigan, from which we can make prompt deliveries. The location of this stock offers exceptional facilities for shipments to all points in Ohio, Indiana, Southern Michigan and the Eastern States. Write us for delivered prices on any size for immediate shipment.

KELLOGG SWITCHBOARD & SUPPLY CO.

CHICAGO, ILL.

Pole Setting Time

and the high prices you have had to pay for Poles surely has impressed you with the necessity of making them last longer.

Avenarius Carbolineum

(Registered)

has been on trial for over 30 years by leading telephone and telegraph companies, Railway companies, the U. S. Government, etc. By simply painting your poles with it, it will more than double their life. It is inexpensive. Write for prices and literature

Carbolineum Wood Preserving Co.

MILWAUKEE, WIS.

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THE WEEK'S MESSAGES

WALBURG, TEXAS.—At a recent meeting of the Walburg-Weir Telephone Company it was voted to increase the capital stock from $4,000 to $7,000.

COMBINATIONS.

SHERMAN, TEX.—The North Texas Telephone Company, with headquarters at Sherman, and an exchange at Denison, has acquired the plant of the Phoenix Telephone & Telegraph Company. This plant consists of a toll line between Sherman and Honey Grove, with exchanges at Honey Grove and Bonham. It is the intention of the new owners to add a number of new copper circuits and to put the system in first class condition.

ELECTIONS.

PIASA, ILL.—The Piasa Mutual Telephone Company has elected the following officers: President, G. R. Waggoner; vice president, Geo. James; secretary, G. H. Clark; treasurer, A. M. Stratton.

CAMDEN, IND.—The Carroll County Co-operative Telephone Association has elected John W. Kerlin, of Rockfield, president, and U. E. Tesh, of Camden, secretary and treasurer.

NELSON, NEB.—The Nuckolls County Telephone Company has elected the following directors: Robt. Greenwood, Chas. Malsbury, B. F. Scroggin, W. A. Voigt, Wm. Peebler, I. C. Chamberlain, S. A. Lapp.

BROOKFIELD, N. Y.—At the annual meeting of the Brookfield Telephone Company, C. C. Craine was elected president, A. D. Chesebro vice-president and N. A. Crumb secretary and treasurer.

CANDOR, N. Y.—At a recent meeting of the Candor Telephone Company the following officers were elected: President, P. C. Meddaugh; vice-president, L. C. Burt; secretary, E. D. Holly; treasurer, H. D. Heath.

MANDAN, N. D.—The present officers of the Mandan Telephone Company are C. E. V. Draper, president and general manager; T. A. Cummins, vice-president; G. B. Furness, secretary; Jos. P. Hesse, treasurer.

WAITSFIELD, VT.—The following officers have been elected by the Waitsfield & Fayston Telephone Company: President, C. E. Jones; vice-president, E. S. Joslin; secretary and treasurer, F. J. Eaton.

CLINTON, WIS.—The following directors have been elected by the Clinton Telephone Company: H. A. Moehlenpah, J. F. Kemmerer, C. W. Collver, R. F. Helmer, I. Jacobson, B. Snyder and O. L. Woodward.

PERSONAL.

F. J. CUMMING, Claresholm, Alb., has been engaged as telephone superintendent for Edmonton, Alb.

P. E. HART, of the Allis-Chalmers-Bullock Company, Montreal, has been engaged as telephone superintendent at Kenora, Ont.

LOUIS MUHLHEIZLER, who has for a long time past been connected with the Pittsburgh & Alleghany Telephone Company, at Pittsburgh, Pa., as Superintendent of Maintenance, has recently been promoted to the position of Chief Engineer. Mr. Muhlheizler is well known to AMERICAN TELEPHONE JOURNAL readers, and has many friends throughout the country who will be pleased to learn of his advancement.

J. J. SPEED has been appointed general manager of the Valley Telephone Company, Saginaw, Mich. He has been in the past connected with the Missouri and Kansas Telephone Company as general foreman of construction for the State of Missouri, with headquarters at Kansas City, and is therefore especially fitted to take up the construction of the new plant which is now being built by the Valley Company.

WM. DEAN WILD has resigned his position in the operating department of American Telephone & Telegraph Company, New York City, to take up special traffic work for the Pacific States Tel. & Tel. Co. in California, with headquarters at Los Angeles.

MISCELLANEOUS.

CENTER, MO.—The Center Telephone Exchange, formerly owned by J. A. Keithley, has become the property of J. Rubison, who will manage the plant.

CALGARY, ALB., CAN.—The first government telephone line built in Canada is now in operation. It runs from Calgary to Banf.

FORT SASKATCHEWAN, ALB., CAN.—The Alberta government has taken over the telephone system at this place and will conduct it as a municipal enterprise.

New Construction in the Field

FRUITDALE, ALA.—New lines are being constructed by the Miller Telephone Company in this city.

WEST PALM BEACH, FLA.—The Independent Telephone Company expects to build lines to Stuart, and will also form connections with the Miami Telephone Company.

EDEN, ILL.—The Logan Township Telephone Company is to commence work on its system.

NEW WINDSOR, ILL.—The lines of the Eureka Telephone Company have been rebuilt.

WHITE HALL, ILL.—The Illinois Telephone Company is planning to entirely rebuild its system, and the exchange will be made strictly up to date in every particular.

LAPORTE, IND.—The Laporte Telephone Company, which has been improving its system at Laporte, is also installing exchanges at Rolling Prairie and Union Mills.

BOONE, IA.—New lines are to be built by the Boone County Telephone Company.

MOUNT VERNON, IA.—A large extension of its plant is planned by the Mount Vernon Telephone Company.

PAWNEE ROCK, KAS.—The Farmers' & Merchants' Telephone Company, which has recently extended its lines to Albert, at which point it has established a switchboard, expects to extend its party lines and form connections with several farmers' lines.

GOSHEN, KY.—Upon the completion of a trunk line from La Grange to Goshen, it is the intention of the Oldham Telephone Company, of La Grange, to establish an exchange at this place.

GRAND BLANC, MICH.—Many improvements in its system are being made by the Grand Blanc Telephone Company.

MARQUETTE, MICH.—About $18,000 in Marquette alone is to be expended by the Marquette County Telephone Company for the improvements which it has planned.

MONROE, MICH.—The Stoddard-Osgood Telephone Company has under construction lines to Detroit.

PONTIAC, MICH.—The plant of the Oakland County Telephone Company is to be completely remodeled, which will make it practically a new plant.

NEW YORK MILLS, MINN.—Among the improvements planned by the New York Mills Telephone Company is the installation of a new switchboard.

WOODLAKE, MINN.—New farmers' lines are to be erected by the Independent Telephone Company out of this city.

PLYMOUTH, N. H.—It is the intention of the Plymouth and Campton Telephone Company to extend its lines.

ALEXANDER, N. Y.—New lines are being constructed by the Darien Telephone Company.

WESTFIELD, N. Y.—To accommodate its increasing business many extensions and improvements in its system are to be made by the Westfield Telephone Company, which will make the plant strictly up to date.

JERUSALEM, O.—The lines of the Jerusalem Telephone Company are being extended in many directions.

WASHINGTON, O.—Construction work on the system of the Washington Telephone Company is soon to commence.

WEST ALEXANDER, PA.—Many improvements in its plant are to be made by the Farmers' Mutual Telephone Company.

SCOTTSVILLE, VA.—The Albemarle Telephone Company expects to rebuild its line between Scottsville and Esmont.

TACOMA, WASH.—About $15,000 will be expended by the Home Telephone Company in the installation of a sub-station in this city.

ROSENDALE, WIS.—Considerable new construction work is to be undertaken by the Rosendale Telephone Company.

STRUM, WIS.—The Beef River Valley Telephone Company, which was organized last summer, and which has acquired the Strum exchange from the Osseo Telephone Company, has under consideration the construction of a number of new lines this year, also many improvements in its system.

CALGARY, ALB., CAN.—The city council has voted in favor of the immediate construction of a local telephone system. Some 4,500 telephones will be required. Address City Engineer Thorold.

EDMONTON, ALB., CAN.—It is the intention of the government, which is now building a line from Coleman to MacLeod, to build lines to Lethbridge, Taber, Medicine Hat, from Edmonton to Lloydminster, Wetaskiwin to Daysland, and from Lacombe to Stettler. Address Hon. H. W. Cushing, Minister of Works, Calgary, Alb.

DUTTON, ONT., CAN.—It is the intention of the Southwold and Dunwich Telephone Company to install its system at Dutton.

UNDERGROUND.

HASTINGS, MICH.—The Citizens' Telephone Company is to spend about $6,500 in underground work.

ALBANY, OREGON.—The Home Telephone Company is to place some of its wires underground in Albany.

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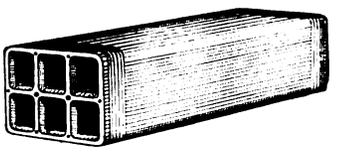

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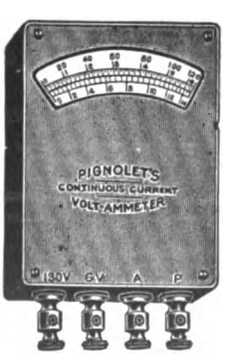

Suppose you have a line in trouble—grounded or open. You don't know the exact location, but you send out a troubleman to hunt it up and clear it. It may take him an hour or a day. Meanwhile the subscriber is getting hot under the collar and saying things about telephones in general and yours in particular.
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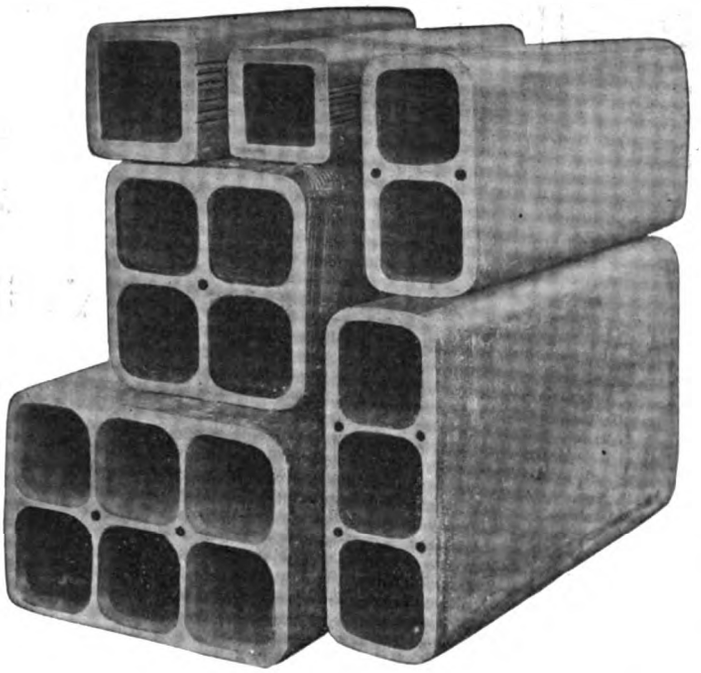

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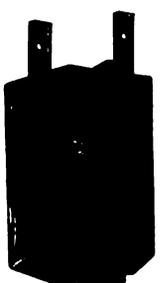

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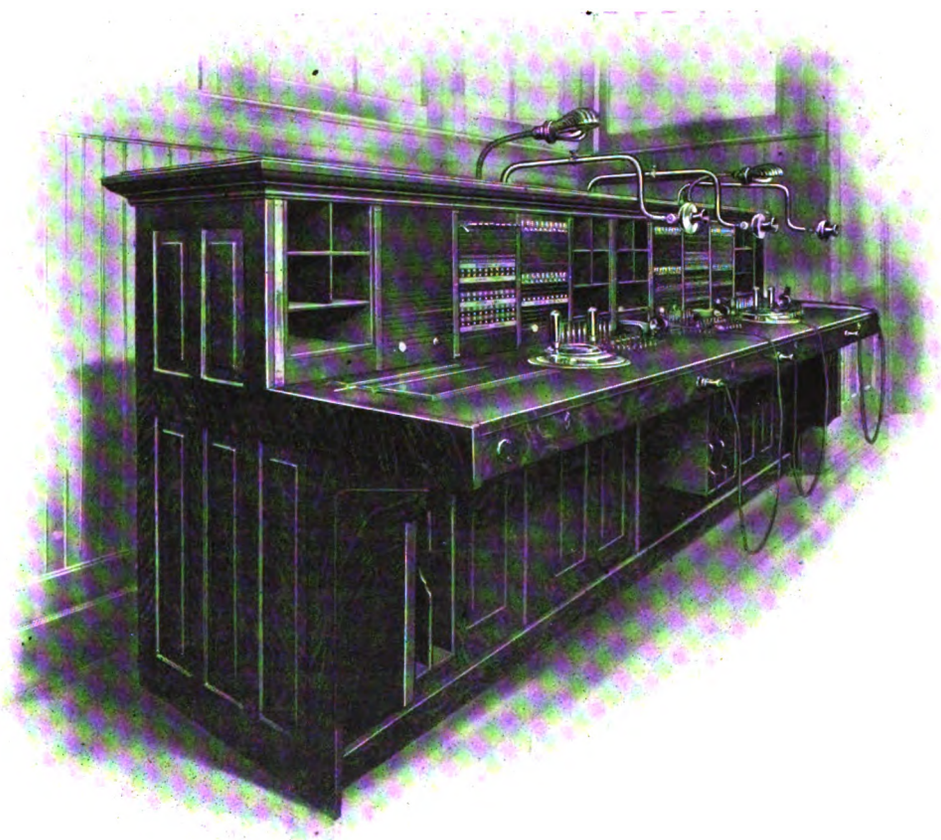

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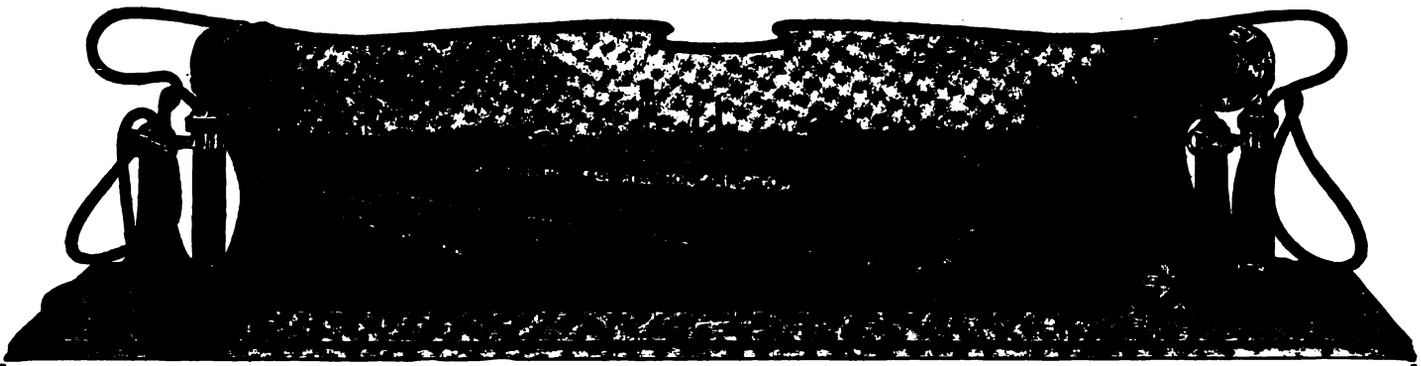

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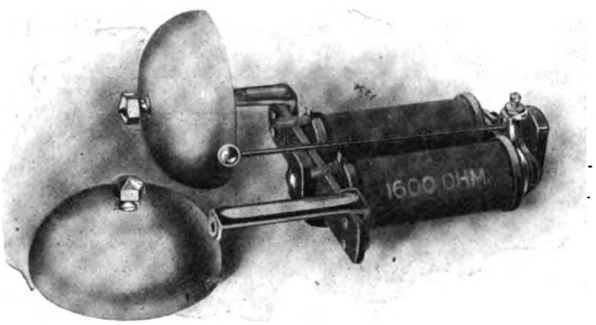
It is the original form of self-contained ringer including **the armature and clapper rod adjustment independent of the ringer mounting plate,** thereby preventing any possibility of this adjustment being affected or changed by any variation or shrinkage of woodwork and disarrangement sometimes caused by rough handling in transit. The complete adjustment is actuated by a hexagon head screw located at bottom of ringer.



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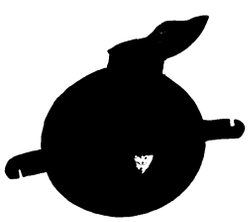

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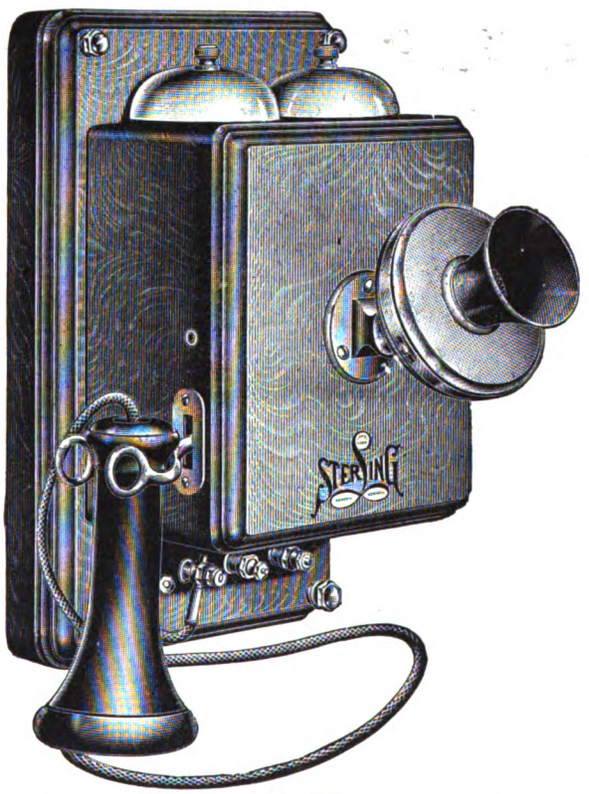

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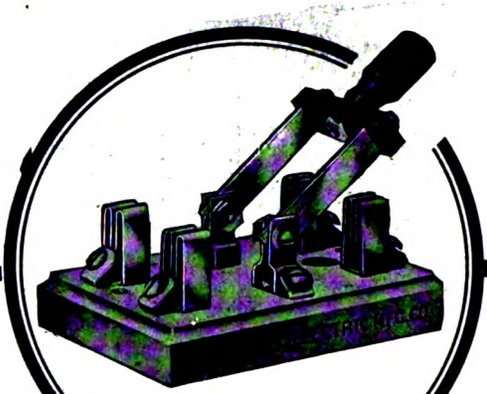

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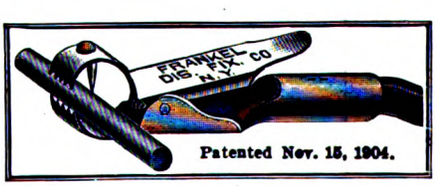

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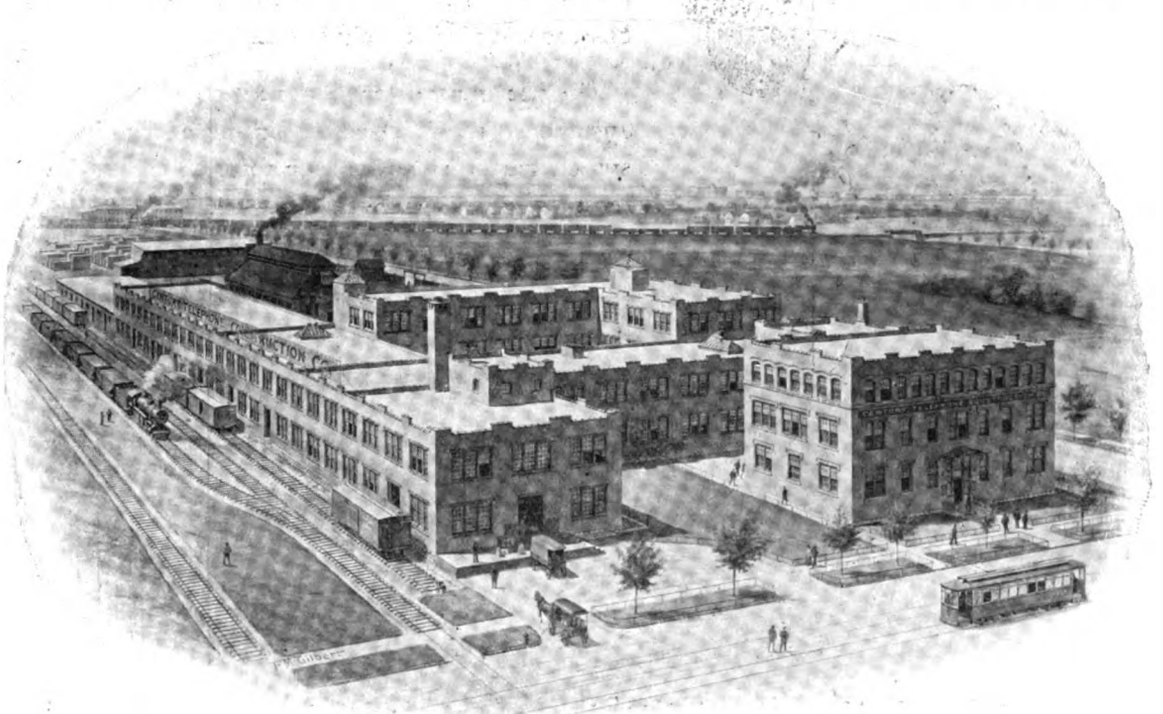

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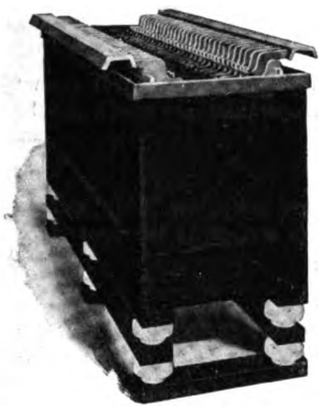

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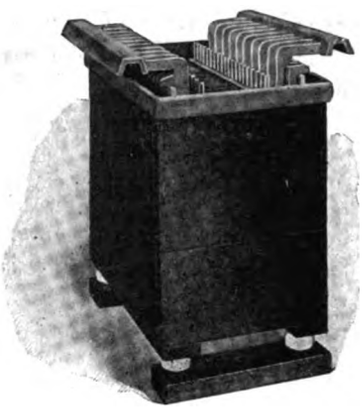

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Blake Signal & Mfg. Co.	35	General Electric Co.	38	National India Rubber Co.	1	U. S. Coin Register Co.	9
Blakeslee Forging Co.	38	General Storage Battery Co.	9	National Telephone Supply Co.	—	Universal Cable Grip Co.	35
Calculagraph Co.	10	Gest, G. M.	39	Nungesser Electric Battery Co.	—	Valentine Clark Co.	37
Carbolineum Wood Preservative Co.	—	Gould Storage Battery Co.	3	Okonite Co.	—	Vote Berger Co.	32, 33
Central Tel. & Elec. Co.	35	Gray Telephone Pay Station Co.	32	Oliver Mfg. Co.	—	Wanted, Situations, etc.	32
Century Telephone Const. Co.	7	Hallett Iron Works	38	Osborne & Son, M. P.	37	Waterbury Company	1
Christensen Co., H. B.	—	Hemingray Glass Co.	—	Pendleton & Gilkey	37	Wesco Supply Co.	—
Collyer Insulated Wire Co.	1	Indiana Rubber & Insulated Wire Co.	1	Pignolet, L. M.	36	Weston Electrical Instrument Co.	38
Commercial Elec. Supply Co.	3	International Teleph. Mfg. Co.	36	Plume & Atwood Mfg. Co.	1	Wire & Telephone Co. of America	34
Cook, Frank B.	—	Kellogg Switchboard & Supply Co. 8 and	36	Porter Cedar Co.	37	Yonkers Specialty Co.	1
Couch Co., S. H.	38	Klein, Mathias, & Sons	38	Premier Electric Co.	—		
Crescent Lumber Co.	37	Lanz, M., & Sons	37	Rochester Sewer Pipe Co.	38		
Crumb, W. H., & Co.	38			Roebling, John A., Sons Co.	2		

U. S. COMBINED

Cash Register and Pay Station

[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

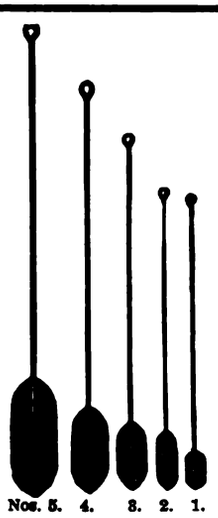
It makes you money.

Write at once for particulars and catalogue.

THE

United States Coin Register Co.

TOLEDO, OHIO



Hercules Anchor

(PATENTED)

The Iron Dead Man

Made in five sizes, from that for 20-foot pole to large one for extremely heavy strains, wrecking trains, etc.

They are the best anchor in every way for holding up heavy leads and round corners. Easy to set, pull against solid earth and will not creep.

As they are made of Malleable Iron, they are practically indestructible. All anchor plates guaranteed.

Send for descriptive circulars and prices.

Manufactured by

THE W. G. NAGEL ELECTRIC CO.

26-30 ST. CLAIR ST., TOLEDO, O.

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THE WHOLE SECRET

of the success of the AUTOMATIC TELEPHONE SYSTEM lies in the elimination of the girl operators. It cannot be denied that most of the troubles and much of the expense in the manual system (where operators are used) can be charged to the operators themselves.

TRUE ENOUGH,

all operators are not faulty all the time, but some of them are at all times and all of them are sometimes. But "a chain is no stronger than its weakest link," and the average telephone subscriber judges the entire service by the poorest he has received.

IN THE AUTOMATIC TELEPHONE SYSTEM

the fallible human operator has been displaced by an infallible machine, a machine that produces perfect telephone service. With the human operator disappear her faults and her expense. The former are many, the latter not inconsiderable.

THAT IS WHY

the AUTOMATIC TELEPHONE SYSTEM, having no operators, can produce a perfect telephone service, prompt, accurate, absolutely secret, at a much lower cost than for inferior manual service. That is why it is a profitable investment to put your money into an operating company that uses the Automatic Telephone System. Our Automatic Telephone System has been adopted in the following cities:

Aberdeen, S. D.
Akron, Ohio.
Allentown, Pa.
Auburn, Me.
Auburn, N. Y.
Battle Creek, Mich.
Beaver Falls, Pa.
Bellingham, Wash.
Butte, Mont.
Cadillac, Mich.
Champaign, Ill.
Chicago, Ill.
Cleburne, Texas.
Columbus, Ga.
Columbus, Ohio.
Dayton, Ohio.
Denver, Colo.
El Paso, Texas.
Emaus, Pa.
Fall River, Mass.
Grand Rapids, Mich.
Hastings, Neb.
Havana, Cuba.
Hazleton, Pa.
Holland, Mich.
Hopkinsville, Ky.
Jonesboro, Ark.
Lake Benton, Minn.
Lewiston, Me.
Lincoln, Neb.
Los Angeles, Cal.
Manchester, Iowa.
Marianao, Cuba.
Marion, Ind.
Medford, Wis.
Miamisburg, Ohio.
Mt. Olive, Ill.
New Bedford, Mass.
Oakland, Cal.
Ocean Park, Cal.
Omaha, Neb.
Pentwater, Mich.
Portland, Me.
Portland, Ore.
Princeton, N. J.
Richmond, Ind.
Riverside, Cal.
Rochester, Pa.
Rushville, Ind.
San Diego, Cal.
San Francisco, Cal.
Santa Monica, Cal.
Saskatoon, Sask., Can.
Sioux City, Iowa.
South Bend, Ind.
Spokane, Wash.
Springfield, Mo.
St. Marys, Ohio.
Tacoma, Wash.
Toronto Junction, Can.
Traverse City, Mich.
Urbana, Illinois.
Van Wert, Ohio.
Walla Walla, Wash.
Wausau, Wis.
Westerly, R. I.
Wilmington, Del.
Woodstock, N. B., Can.

AUTOMATIC ELECTRIC COMPANY

VAN BUREN AND MORGAN STS. **CHICAGO, U. S. A.**

The CALCULAGRAPH

Is a Money Maker

By the use of the CALCULAGRAPH collections are assured because the mechanical record of elapsed time shown on the outward ticket is relied upon by both the subscriber and the manager.

Thus no concession in charges is necessary. Payment for excess time is assured.

THE CALCULAGRAPH MAKES NO CLERICAL ERRORS

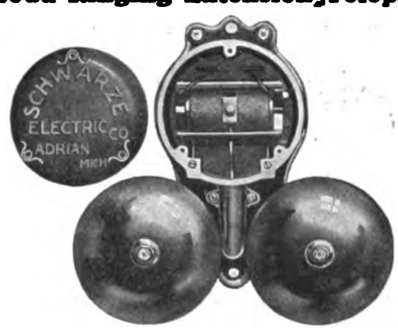
WRITE TODAY FOR COMPLETE DATA.

CALCULAGRAPH COMPANY

1437 JEWELERS' BUILDING, NEW YORK CITY

Magneto Loud Ringing Extension Telephone Bells

Gongs 6-inch to 10-inch



All Resistances — All Weatherproof

Efficiency, Durability and Price will interest you.

Schwarze Electric Co., Main Office & Factory, Adrian, Mich.

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Installing a Philippine Telephone Exchange

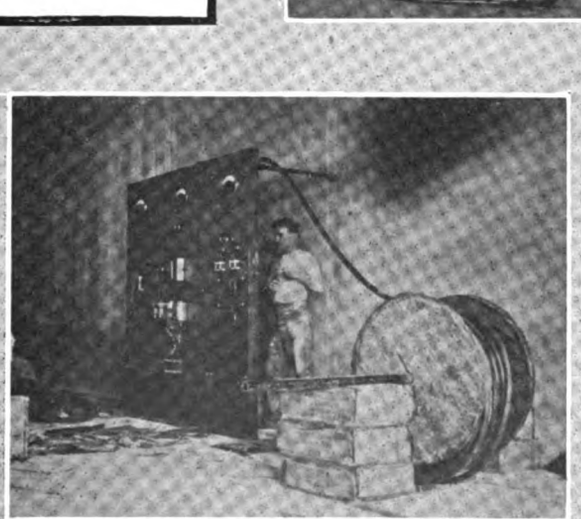
By William Frost.

Illustrations from photographs by B. H. Skinner.

WHEN starting out for a several thousand mile trip to install a telephone exchange in a foreign country, those who are chosen to take charge of the work are always considered specially fortunate. They have what is by many considered to be a long and happy vacation. This was the point of view taken by the friends of B. H. Skinner, S. H. Foley and B. C. Newly, who last year were sent to the Philippines to install modern equipment in the exchange at Manila. It was indeed a long voyage, as the ship touched at Honolulu, then went to Japan, and finally brought the telephone men into Manila Bay, twenty-nine days after it had started from San Francisco. The first thing necessary was to file an invoice at the custom house. All telephone goods are dutiable, and those in whose care they are placed must lose no time in getting the papers in the hands of the officials, as it is likely to be some days before the goods can be examined and passed.

The Manila exchange, in which the apparatus was to be installed, is located on the water front, and from its windows is obtained a view which is a decided novelty to those accustomed to looking out on the city streets which surround our larger offices in the United States.

For carrying on the work it was necessary to procure native helpers, and some very interesting conditions were met. The first work done in the exchange was the placing of the power board, which presented no features materially different from an installation of the same kind of apparatus in the United States. In the meantime the conduit was being placed outside. One of the photographs reproduced on this page shows the foreman and two of his native helpers. The office manhole beside which they are standing is below the river level. Except at low tide it is likely to contain from two to three feet of water—a most uncomfortable condition, which could not be avoided.



View From the Front Window of the Manila Operating Room.

Running a 750,000 c. m. Wire From the Reel Into the Manila Power Board.

An American Cable Foreman and His Two Helpers Standing Beside the Office Manhole.

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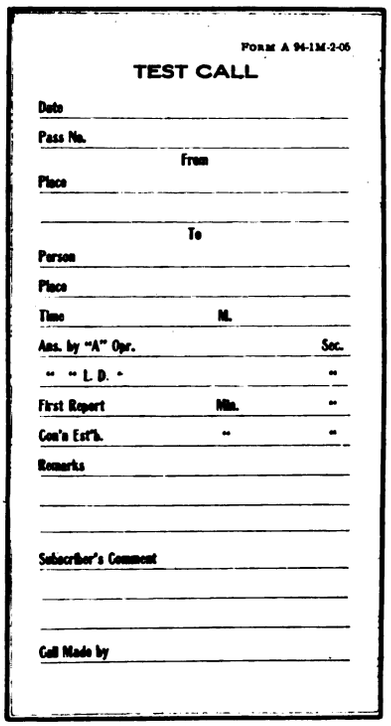
Developing Long Distance Business*

By Frank Hart.

NATURALLY a good traffic manager will try to build up his business to the points with which most satisfactory connections may be obtained, not trying to induce subscribers to use lines to places where the lines are not yet in good condition, as it is very difficult to get business back after being lost through poor service. With the constant building of new toll lines and rebuilding of exchanges, however, the field which may be reached by the subscribers in any city is rapidly enlarged, and it is the duty of the traffic manager to see that the increase in business keeps pace with the advance of opportunities.

The method which has been used in Pittsburg for introducing new connections is based on the idea that it is least difficult to advertise new lines from a small city or town, as there are fewer people to reach. When a new line is opened up and in first-class condition free service is given for a few days from the smaller city to the larger one at the other terminal of the line. People in the small place take advantage of it and call up those in the larger city who are in the habit of calling them, thereby advertising the fact that there is a new line to talk over. It is found that some one will call up to ask the state of the weather, or some such unimportant things, but if the connection is satisfactory this does no harm, as he is likely to say a good word that will be beneficial at some future time.

The next thing done after the free service is over is to have one of the pleasant-voiced operators call up each subscriber who may have cause to use the line. She uses good judgment in getting some one in authority before she talks and is well posted as to what to say. Her talk runs something along this line. "Is this Mr. Jones? This is the Long Distance Department of the Home Telephone Company. I wish to inform you that our new lines to Allentown have been completed and we can give you first-class connections with Allentown, Scranton, Wilkes-Barre, Wayne and all other points in Eastern Pennsylvania. We would be pleased to have you try our lines the next time you wish to talk to any one in that locality." This will usually start people to asking questions about other points, so the operator has to be well posted as to all points reached. It might be useful to have her keep a record of all questions of importance asked her, turning this in to her manager. This will give very good material for the solicitor to work on later. This plan of having an operator call up the subscriber has been found to be very beneficial, effective and economical way of advertising.


FORM A 94-1M-2-06

TEST CALL

Date

Pass No.

From

Place

To

Person

Place

Time M.

Ans. by "A" Opr. Sec.

" " L. D. "

First Report Min. "

Con'n Est'h. " "

Remarks

Subscriber's Comment

Call Made by

Fig. 2. Test call ticket used by toll operator on calls paid for by pass. Size 2¾ x 5¼ inches.

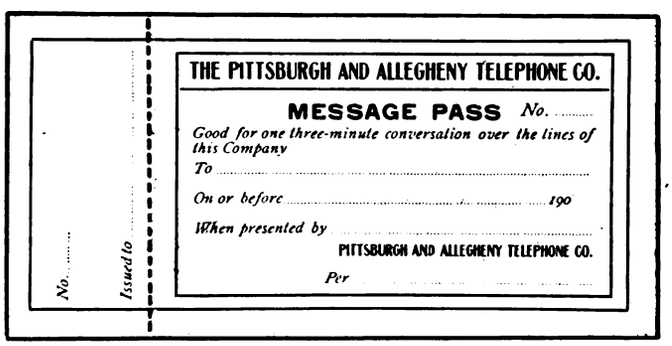
In addition to this verbal notification, a circular letter is used. It is typewritten and addressed properly to each person or firm to whom written. This letter tells what lines have been completed to various points, stating briefly anything of special interest, and should be as short as possible to insure reading. It is well to have something catchy in the way of advertising slips to enclose in each letter mailed by the company, no matter to whom it goes.

Newspapers, billboards, street cars and advertising of this description may be used at the manager's discretion, as this runs into money fast and will have to be governed by the conditions and the results expected.

The work of the solicitor follows the two plans just mentioned. In introducing new lines it is well to use the message pass and have it given out by the solicitor or manager. This system of giving free service works more satisfactorily in larger cities than the universal free service mentioned before for smaller cities, as the company is able to place them where they do the most good, and also to ascertain to whom the users talk. The message pass is worded as shown in Fig. 1. These passes are issued in book form, about twenty-five in each book, each having a stub attached. On the stub is placed the number of pass and the name of the person to whom it is issued. To go with this it is necessary to have a call ticket printed for the toll operator to fill in, and this is made out as shown in Fig. 2.

This slip or ticket when filled out gives the solicitor information to use on his return visit.

As most managers are familiar with the coupon system it will not here be discussed in detail, but the writer has developed a system for the handling of it which may be interesting. The first work for the solicitor to do is to induce the subscriber to use the lines, however little it may be, keep close record as to the amount they use, and as soon as the amount justifies such action call and sell him a small coupon book, increasing the size of the book as his business increases.


No. ..... Issued to .....

THE PITTSBURGH AND ALLEGHENY TELEPHONE CO.

MESSAGE PASS No. .....

Good for one three-minute conversation over the lines of this Company

To .....

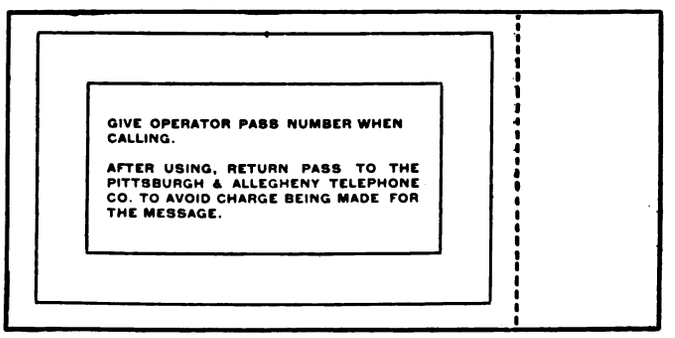
On or before *190*

When presented by .....

PITTSBURGH AND ALLEGHENY TELEPHONE CO.

Per .....

Fig. 1. Form for message pass used in building up toll business to newly connected points.


GIVE OPERATOR PASS NUMBER WHEN CALLING.

AFTER USING, RETURN PASS TO THE PITTSBURGH & ALLEGHENY TELEPHONE CO. TO AVOID CHARGE BEING MADE FOR THE MESSAGE.

Fig. 2. Back of message pass shown in Fig. 1, bearing directions for its use.

The writer has made out each month a statement covering the amount of toll coupons used by subscribers using more than one dollar per month. This statement covers six months, always dropping one month as the new month is added. In this way it can be easily seen whether each subscriber's business increases or decreases. This is valuable information for determining the size of the coupon books they should have.

Careful records are kept of the amount of traffic over each

*Abstract from an address delivered at the convention of the Pennsylvania Independent Telephone Association.

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line—outgoing, incoming, through and the maximum day. These records are of great importance, as they show whether the company is getting the proper amount of business over its circuits and when new circuits are required. It thus gives a record which makes it possible for the company to spend the money it has to put out for improvements where it will do the most good.

Securing City Right-of-Way Permits

By O. R. Barnes.

GOOD faith and sincerity are the two most important factors in securing rights-of-way and holding them. If the agent possesses these qualities and understands his work thoroughly he will have very little trouble in obtaining what he goes after, but if he depends solely upon his ability as a social entertainer and upon his own personality he will meet with refusals on all sides. To the latter class of right-of-way agents belongs the fellow who by smooth talk and false promises entices a property owner to give his consent to the placing of wires and after obtaining the desired permission forgets all about the idle promises. This same agent will then have the effrontery to hand this concession in to the company as a bona fide agreement, thereby deceiving his employer, as well as the person who made the concession. The first knowledge the company obtains of the position in which it has been placed is likely to be due to the arrival of the man who gave his consent to the use of his property in a highly antagonistic mood because the promises made to him have been ignored.

Successful right-of-way work cannot be done along such lines. When promises have to be made they should be made with discretion and carried out to their fullest extent. One trouble and perhaps the principal reason why so many rights-of-way are unsatisfactory is because many agents lack the necessary knowledge of the telephone business. When an agent is sent out to get a necessary permission, say a guy-wire attachment, it is assumed that he knows what a guy wire is, what it is used for, and is able to concisely explain to the ordinary person, who is wholly ignorant of methods of telephone line construction, its great advantages in eliminating accidents by strengthening the construction. He should be able to weigh the value of the permission and reason with the property owner in a straightforward and honest manner, admitting many things, but omitting nothing that will help to capture the permission amicably.

Recognizing the hopelessness of obtaining permissions under false pretences recently caused one of the largest companies operating in the East to place all of its right-of-way work in the hands of its various construction engineers. Many telephone men thought at the time that this particular company was making a serious mistake. They could not possibly see how a construction man could talk any one into giving a permission. But it did not take long for the construction engineers to become tactful and in a comparatively short time they demonstrated to the satisfaction of the company that they could handle the public better and with less red tape than when they had to depend upon a separate department to secure for them the permissions necessary to carry on their work. The engineers now secure permissions more quickly and have fewer "come-backs" than under the old method, and this is accounted for by their clear insight into all the features of telephone business which apply directly to this class of work.

The construction engineer has many good points in his favor. He knows exactly what he wants when talking for a permission and can be explicit in his descriptions. Moreover he knows why he wants it and therefore knows its real value to the company. By talking to the man personally he is able to judge how the work should be performed to maintain his good will. If the man has any stipulations to make when granting the permission, the engineer knows and can say, without seeking advice from somebody else, whether or not the stipulations can consistently be adhered to and thus he cuts out considerable red tape. Should the engineer make any promises to the grantor he is in a position to see that the promises are promptly fulfilled by having their terms included in definite form in the specifications for the work.

There are many advantages to be gained by having the engineer secure his own permissions. It enables him to handle the construction work from start to finish without the assistance of a third party. To begin with, the engineer first makes a study of the situation and works up his layout; from his layout he makes a list of the permissions required; then he goes to the City Hall records and secures the names of the parties from whom he must get the permissions; then he looks their addresses up in the city directory; finally, with all this information in hand he goes and interviews his parties.

After securing the necessary permissions he makes a record of them and forwards them to the filing department; he then writes a set of specifications in which he describes how the work is to be performed by the various construction forces and calls their attention to any promises or stipulations made in securing the permissions in connection with the work. These specifications are returned to him upon completion of the work. He then goes over the work and checks it up to assure himself that it has been done to the satisfaction of all concerned. The specifications he files for future reference and the job is considered closed. The mere fact that the engineer checks the work when it has been completed shows that he realizes that the only way in which the company may successfully hold the permissions given him is to disarm criticism by discovering and rectifying as quickly as possible any poor work or errors made by the construction forces before those errors cause a complaint from the owner of the premises upon which the work has been done. There may have been only a trivial deviation made in carrying out instructions, having no special significance to the man performing the work, but still capable of causing protest from the subscriber and cancellation of the permission. Such a deviation is usually one which fails to make the construction unobjectionable to look upon.

There are many chances for errors to occur in the performance of construction work. Take, for instance, the work necessary to complete a junction box connection: First, the subway department lays the duct, etc.; second, the cable department pulls in the cable; third, the splicers wipe the connections and cut the box into service; fourth, the painter paints the cable, box and other exposed parts; finally, the wiremen run the wires to the box. Here are at least five chances for mistakes to occur. Now what is a better way for the company to discover mistakes and live up to its part of the agreement which says that the work will be done with care and that all damage caused thereby will be repaired at the expense of the company than by detailing a competent man to go over the work and check it up?

Successful rights-of-way can only be obtained by recognizing the limitations of the permissions as they are granted—much trouble and expense can be avoided by living within the bounds of those limitations.

F. P. FISH SUCCEEDED BY THEODORE N. VAIL AS PRESIDENT OF AMERICAN TELEPHONE & TELEGRAPH COMPANY.

FREDERICK P. FISH resigned as president of the American Telephone & Telegraph Company on April 30th, and was succeeded by Theodore N. Vail, formerly a director and member of the executive committee. Mr. Fish will again resume the practice of law, and will continue to act as one of the legal

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advisers of the company. His successor, who is sixty-two years old, is one of the earliest men to become connected with the telephone business, having assisted in the organization of the original Bell company, with Gardiner G. Hubbard, to exploit the invention of Alexander Graham Bell. He was connected with this company, and was general manager of its successor, the American Telephone & Telegraph Company, until 1889, when he left the telephone business to engage in the construction of electric railways in Europe and South America, remaining in this business for about ten years.

At this same meeting W. Murray Crane, the junior United States Senator from Massachusetts, was elected a director and member of the executive committee. succeeding Alexander Cochrane, who resigned.

Rural Party Line Ringing Codes*

WM. SCHAFER, president of the Ida Telephone Co., Ida, Mich., has independently worked out a plan very similar to that contributed by Mr. John Smith. Odd numbers represent short rings, the number of rings being denoted by the position of the number in a regular sequence; even numbers represent long rings, for example, rings are as follows: 1, -; 3, - -; 5, - - -; 2, —; 4, — —, etc. Combinations can be made so that on a sixteen party line no number need have more than four rings.

The two right hand figures in the directory listing always represent the ring number, a cipher (0) being used when only one significant figure is needed, as 1507 denotes four short rings on line 15.

2 - -	13 — - - -	24 - - — -
3 - - -	14 — - - - -	25 - - — - -
4 - - - -	15 — - - —	26 - — - -
5 - - - - -	16 — - - —	27 - — - - -
6 - - - - - -	17 — - - - —	28 - - — — -
7 - —	18 - — -	29 - - - — —
8 - - —	19 - — — -	30 - — - —
9 - - - —	20 - — - -	31 - - - — -
10 - - - - —	21 — — - -	32 - - — —
11 — -	22 — — - -	33 — — — - - -
12 — - -	23 — — - - -	34 - — —

Table 1.

The Cape Cod Telephone Company, Hyannis, Mass., uses a code covering a heavily loaded line if necessary. It is shown in Table 1. Number 33 has not given good satisfaction and is no longer assigned.

C. W. Shimel, proprietor of the Shimel Telephone Company, Casey, Ill., devised eleven years ago an exceptionally simple, novel and interesting code which has given good satisfaction ever since it was put in service. The code is shown in Table 2.

The operator does not even have to memorize this code. To ascertain the number of long and short rings she simply divides the assigned ring number by 4. The quotient is the number of long rings, and the remainder the number of short rings.

In the directory the line or drop number is preceded by the ring number, so that should the drop number be 48 the first telephone on the line would be 548, the second 648, etc.

Central —	8 — —	12 — — —	16 — — — —
5 — -	9 — — -	13 — — — -	Etc.
6 — - -	10 — — - -	14 — — — - -	
7 — - - -	11 — — - - -	15 — — — - - -	

Table 2.

This will make clear the reason for beginning the ring numbers at 5, namely, to prevent the telephone numbers of regular lines from interfering with rural line numbers. The first 500 numbers are by this plan given over to regular local telephones. For exchange having a greater number of local telephones a letter may be used to indicate to which class a line belongs, as R for rural. Mr. Shimel was called upon recently to devise a code for a line having thirty stations and used the same plan up to 14, beginning over again at 15, after which a short ring was inserted. This, for purposes of computation, was assigned the value 10, this or its multiple throughout the twenties to be subtracted from the ring number before dividing by four. Thus, the code for various numbers may be arrived at as follows:

19 = 10+(2×4)+1 = - — — -
27 = 2×10+(1×4)+3 = - - — - - -
30 = 2×10+(2×4)+2 = - - — — - -

Experience has demonstrated that this code can be learned in a few moments, both by subscribers and operators, and mistakes seldom occur.

C. I. Stocking has not only an original ringing code, but also a special method of arranging and numbering rural lines. In one of his exchanges, for example, there is a 750 line local switchboard. All rural lines come to the last position. The first rural line is numbered 800, the first telephone on this line 801, the second 802, the tenth 810 and so on. The next line is numbered

Numbers on this side of the dotted line denote line number.	8 9 13		01 02 17	Numbers on this side of the dotted line denote the signal to be rung.

Table 3.

900, and the telephones designated in the same manner; the third line is numbered 1000 and similarly upward. The figures in the units, tens and hundreds position then denote the number of the line and the final numeral the ring number for the particular telephone desired. This may be made, perhaps, more clear by the diagrammatic explanation shown in table 3.

The signaling code to correspond to the ring numbers is shown in table 4.

1 — —	6 - - —	11 - — -	16 - — - -
2 - - -	7 - - - —	12 — - —	17 - — - - -
3 - - - -	8 — -	13 — - - —	18 — — -
4 - - - - -	9 — - -	14 - - — -	19 - — — -
5 - —	10 — - - -	15 - - - — -	20 - - — - -

Table 4.

Mr. Stocking has on no line more than twenty telephones and accordingly stops at that number, although his plan is capable of being extended should such action be desirable. He states that twenty signals "will give the average exchange manager a chance to load his lines as heavily as he likes."

H. M. Rounce, General Superintendent of the La Crosse Telephone Company, La Crosse, Wis., has a good word to say for the "Morse" code. An abstract from his letter gives the following information:

"The farm line is assigned some definite number of jack and drop if drops are used in place of bells. That number is then used as the two figures at the left of the complete number, if the drop number assigned has two figures. If the drop number has only one figure, place the Fig. 1 after the drop number. Thus if the drop number is 8, the number used at the left will be '81.' As the two figures at the right use the numerical number of the telephone counting out from the office or in the numerical order of the installation; the first nine numbers to be preceded by a cipher.

*Continued from previous issues.

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"To illustrate: line No. 29 will appear in the directory as 2901, 2902, 2903 and so on up to the whole number of telephones on the line. Likewise line No. 8 will appear as 8101, 8102, 8111 8118.

"The usual Morse codes of ringing are used, but will be listed on the front of the switchboard and numbered to correspond with the number of the telephone in the series of figures used at the right of the number given in the directory number. If the code signals are arranged in numerical orders of five in each section, the operator will more readily pick out the code signal needed to ring the party called for. Operators will soon become used to the codes by number and will hardly ever look at the list of signals, especially of those parties who are called most frequently.

"We have been using this code system for some years and have not seen anything that we liked better. It fits well with the other numbers in our directory, as they are for the most part three figures followed by a letter to indicate the party on the line. (864-M.) We use the four letters A, C, M and R to indicate the proper key to use on selective party lines."

Depreciation*

By H. A. Douglas, General Manager Cedar Rapids & Marion Telephone Company.

DEPRECIATION is one of the most important factors in calculating earnings, and success or failure of telephone investments. There is a wide difference of opinion as to the proper percentage to be placed to the credit of this account, and the proper method of handling the account. Depreciation is the loss upon assets which are diminishing in value from year to year.

When Independent plants were first constructed, for about 500 to 800 subscribers, the cost per subscriber's line complete was about $55 or $60, including the switchboard. By adding to this plant, in the way of overhead cables and wires, additional switchboard and operators, it was possible to use this equipment and construction with fair results until the 1,000 mark was reached.

Then it was found necessary to entirely rebuild the system, in most instances placing cables underground in the business section, replacing the outside pole construction with heavier and longer leads, put up new cables and take down the old. The exchange, having outgrown its usefulness, must be discarded and an up-to-date common battery lamp signal multiple switchboard installed, with all the necessary expensive apparatus entering into its construction and operation. The old equipment, while not being worn out, if sold at all would only bring about 10 per cent. of its original cost. One reason for this heavy depreciation was due to the rapid improvements in telephone apparatus, which made second-hand equipment practically worthless. About the only parts of an old plant which could be used again were the poles themselves, and most of these must be changed or taken down and reset in another place, making them cost about two-thirds as much as new. If the shortened life had been taken into consideration, the cost could be figured at about the same as new. Overhead iron wire which had been in the air subject to the city smoke five or six years had been practically destroyed by corrosion and rust. Aerial cables that have been up for six or seven years are found in most instances to have depreciated to such an extent, from crystallization, improper handling and wear and tear, as to preclude the possibility of their being used again. The crystallization of the lead sheath is caused by the vibration of the pole line, due to wind and other causes, such as street car overhead construction when it is directly or indirectly attached to the pole line. In this connection it might be well to call attention to the very rapid deterioration of ærial cables crossing and attached to bridges. The vibration is so great as to cause an absolute destruction of an entire cable sometimes in as short a period as two or three years.

In order to properly house this new and expensive central office equipment, and insure it against fire, it was necessary to abandon the old quarters and construct in most instances a fireproof building as a central office. This entire rebuilding of the plant, for an exchange of 2,500 or 3,000, might cost, on an average, about $120 per line, so that it is safe to say that almost the entire original investment was lost through depreciation.

Depreciation enters largely into maintenance expense, and should be very carefully taken into calculations when dividends and net earnings are figured.

*Abstract from a paper read at the annual convention of the Iowa Independent Telephone Association.

The methods of ascertaining the proper amount to be placed to the credit of this account are many and productive of very different results as to the correct charge. Owing to different conditions, the difference in construction, and handling of the several properties, it is impossible to lay down invariable rules. The writer believes nearly all practical telephone engineers maintain that from 10 to 12 per cent. should be allowed under such conditions as have been mentioned.

When the plant is new the percentage is probably considerably less than 10 per cent., but as the construction grows old it increases from year to year until it is considerably more, and probably reaches as high as 15 per cent., so that if the actual depreciation charge were ascertained, and made from year to year, the rate would so increase as to become a burden upon the property, in the latter years of its operation, almost too heavy to bear. Reconstruction, due to rapid increase, enters very largely into this calculation, as the depreciation upon material taken down will average from 50 to 100 per cent., if it has been in service any length of time.

Whatever rule or method is determined upon should be very closely adhered to for several years in order to demonstrate its accuracy. If it is determined that the life of a plant is ten years, and therefore the depreciation 10 per cent., the following table, for which we are indebted to Keister's *Corporation Accounting*, will be useful:

For illustration: If our plant costs say $1,000, with a determined life of ten years, depreciation 10 per cent., we make the following deduction:

"That which expires in 'Life,' leaving no residual value, should be divided by the given number of years for that life upon its original cost." Therefore—

ON ORIGINAL COST.

Years—	1	2	3	4	5	6	7	8	9	10	
Depreciation, %...	10	10	10	10	10	10	10	10	10	10	= 100
Repairs	1	2	3	4	5	6	7	8	9	10	= 55
Total ann'l charge..	11	12	13	14	15	16	17	18	19	20	= 155

That which leaves a residue of value under any circumstances should be depreciated upon its diminishing value, and as our plants will leave a very material value at the end of ten years, we should consider carefully the following table:

ON DIMINISHING VALUE.

Years—	1	2	3	4	5	6	7	8	9	10	
Dep., %..	10	9	8.10	7.29	6.56	5.90	5.30	4.78	4.30	3.87	= 65.11
Repairs..	1	2	3	4	5	6	7	8	9	10	= 55
Total an.. charges.	11	11	11.10	11.29	11.56	11.90	12.30	12.78	13.30	13.87	= 120.11

This 120.11, with the residual value of 34.89 makes up the total charge of 155. It will be seen that depreciation on the original cost is therefore a writing off of the actual capital without having the residual value.

The writer believes that the general practice with most companies is to charge off to depreciation a sufficient amount of the surplus earnings to cover what per cent. they may decide as the

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proper amount to charge to this account. This earning has, however, in nearly all instances been used in extensions and renewals, and does not represent actual cash. It is very convenient to be able to use this fund and then dispose of the excess earnings in this manner, without declaring additional stock dividends, but the question arises, is it the proper procedure?

The writer maintains that it is not. There is only one safe way in which it is possible to provide for the future, and that is to establish a reserve fund, and annually or semi-annually set aside to the credit of this fund a certain amount of the gross rental from each instrument in service, or carry to this fund a certain percentage of the total investment not less than 3 or 4 per cent. in actual cash, the same to be held as a reserve, to be drawn upon in extraordinary emergency or to reconstruct the plant in ten years. This reserve will stand as a protection against the investment. Securities would take a standing among the best, because they could be guaranteed by a cash backing that would insure their value.

If there are some who object to the cash reserve fund, the writer would suggest that a certain percentage of the amount of earnings expended on new work every year be charged to betterments, which would reduce the apparent earnings and at the same time keep down the maintenance and repairs expense, enable the company to make a good showing and fortify it in a manner against the future. If something of this kind is not done the inroads made by depreciation will put the balance on the wrong side of the ledger.

ARKANSAS INDEPENDENTS TO HOLD ADJOURNED MEETING ON MAY 20TH AT FT. SMITH.

WHEN the first meeting of the Arkansas Independent Telephone Association was held this year important matters relating to legislation were considered. At this time, however, many of the most active telephone men in the State were extremely busy and were unable to attend the meeting. It was therefore agreed that it should be adjourned and that all members should come together again on May 20th at Electric Park, Ft. Smith.

Attractive postal cards have been mailed by the association to all members, notifying them of this convention. Among the important matters which will come up at this meeting is the report of the committee which was appointed at the first meeting to look after the interests of the Independent companies before the legislature.

Prominent telephone men from other States will be present at the meeting, and the best men in Arkansas will tell of their experience in telephone work. Special invitations to manufacturers have been issued, and operating companies will have a first class opportunity to learn of the latest ideas which have been embodied in equipment and construction material. A. E. Boqua, secretary of the association, says: "Indications are that we will have a rousing meeting. We are extending invitations to all of our neighbors in Missouri, Texas and the new State of Oklahoma to assist in making this meeting one of the best ever held in the Southwest." Everyone who can possibly spare the time will no doubt find it to his advantage to make some sacrifice, if necessary, to attend this meeting and join in the proceedings, which are bound to have a good effect on the telephone business throughout the State.

THE SUMMER SCHOOL FOR ARTISANS AT THE UNIVERSITY OF WISCONSIN.

THE seventh annual session of the Summer School for Artisans, held under the direction of the College of Engineering of the University of Wisconsin, begins June 24, and continues for a period of six weeks.

Courses of study are offered in the following subjects:

ENGINES AND BOILERS.—Lectures and laboratory courses covering the theory, construction, management and testing of steam engines, boilers, gas engines and gas producers, refrigerating machines, etc.

APPLIED ELECTRICITY.—Lectures and laboratory courses covering the theory of direct and alternating current dynamos and motors, the operation and method of testing electrical machinery, batteries, transformers and other apparatus, photometry and calibration of instruments.

MECHANICAL DRAWING AND MACHINE DESIGN.—Elements of applied mathematics, courses in mechanical drawing and machine design adapted to the preparation of the students.

MATERIALS OF CONSTRUCTION, FUELS AND LUBRICANTS.—Lectures on the properties of materials accompanied by laboratory tests; lectures on fuels and lubricants with laboratory tests on the heating value of coals and efficiency of lubricants under various conditions.

SHOP WORK.—Practice with hand tools, wood and metal working machinery, and in blacksmithing and pattern making.

MANUAL TRAINING.—Lectures and laboratory courses adapted to the requirements of manual training teachers.

The entire laboratory and shop equipment belonging to the College of Engineering is used by the students in the Summer School.

The requirements for admission do not extend beyond a working knowledge of English and arithmetic, but the policy is to allow a large amount of individual work so that the student may take advantage of all the preparation he has obtained.

This school offers to those unable to take a regular four years' course an opportunity of obtaining a working knowledge of the methods of testing and the use of instruments, together with such theoretical principles in each case as the nature of the subject and the preparation of the student may permit.

Correspondence students have found this school of value in giving an opportunity for laboratory practice along the lines in which they have had theoretical instruction, thus fitting themselves more perfectly for practical work.

A bulletin describing the work of the School for Artisans in detail will be sent on application to FREDERICK E. TURNEAURE, Dean, College of Engineering, Madison, Wis.

NEBRASKA VOTERS AT CRETE COME OUT STRONGLY IN FAVOR OF INDEPENDENT TELEPHONES.

ON TUESDAY, April 16th, after the proposition of the Independent telephone company which desires a franchise at Crete, Neb., had been thoroughly set before the people, a special election was held.

Of course there had been the usual amount of vigorous opposition by the Bell company prior to the date of the election, but when the matter was put to the test the desire of the people for the service of the Independent company and connection with the thousands of other Independent telephones in the State was clearly shown by the result. The vote stood 384 in favor of granting the franchise, while only 87 voters recorded their opposition.

CITIZENS OF SENECA, KAN., PREFER ORGANIZING NEW COMPANY TO RENEWING BELL FRANCHISE.

ALTHOUGH originally served by a small Independent company, the people at Seneca, Kan., have for several years past been using Bell telephones, which were installed after the first exchange had been bought up by the Bell company. Recently the franchise expired and the company has applied for an extension, although at this time the city mentioned several conditions which must be observed before the new franchise was granted.

Most of these conditions were readily agreed to by the company, but in the matter of rates there was a decided difference of opinion. In many of the neighboring towns where there are Independent companies the rates are much lower than in Seneca, and the council believed that the company before being granted a new franchise should agree to reduce its prices for service to the same figures which obtain in neighboring localities. When this was refused the citizens immediately considered the organization of an Independent company, and it is understood that many subscriptions for stock, contingent upon its organization, have been taken.

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QUERIES

DIFFERENCE BETWEEN NOISE INDUCED BY HIGH VOLTAGE WIRES DURING DAY AND NIGHT.—(854.)

We are operating a telephone system in a city where the power company has an all day service as well as at night. One of our leads parallels the high tension leads of the power company for about a mile and we have induction noises on the lines thus paralleled. We notice that this noise is greater at night than in the day time and cannot understand why this should be the case as the voltage on the power leads is the same all of the time. Will you kindly explain the reason for this, and also tell us how we can get rid of this noise? H. G.

The reason you experience more trouble from induction at night than in the day is evidently due to the fact that there is a greater consumption of current at night owing to its use for lighting, etc. The amplitude of the field occupied by lines of force around an electrical conductor increases and decreases according to the amount of current flowing through the conductor, irrespective of the voltage. As by increasing the load a greater amount of current is caused to flow in the line and consequently causes a wider spreading of the lines of force, giving incidentally a greater number in a given area. As induction is due to the cutting of these lines of force, as explained in Query No. 821, issue of February 9, 1907, it will readily be seen that a greater number of lines of force are cut and naturally a greater induced current is set up in the telephone line, thus causing a more pronounced noise in the telephone instrument.

As a remedy for this we would suggest getting as far away from the power lead as is possible and also transposing your lines so as to break up the inductive effect as much as you can.

INSTALLING AND TESTING CONDENSER IN MAGNETO INSTRUMENT.—(855.)

You have shown us so many easy ways out of trouble in the past that we hesitate to ask any more favors, but as we are again "at sea" on a matter we have no other recourse but to inflict ourselves upon you once more. We wish to assure you, however, that we appreciate your kindnesses in this relation very much and only regret our inability to suitably reciprocate.

About a year ago we equipped one of our lines with telephones having condensers installed so as to allow central to ring along the line even though some of the receivers might be off the hooks. These instruments have given us great satisfaction and we desire to equip the instruments on our other lines also in this way. Will you not favor us with instructions as to the correct manner of accomplishing this work; also as to how we may test the condensers in the instruments now in use to determine whether they are in proper condition or not? H. S. G., Neb.

It is an easy matter to install condensers in the other bridging

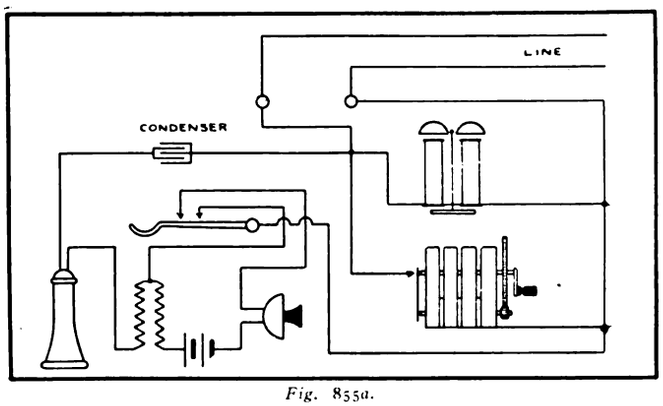

Fig. 855a.

telephones on your system. Fig. 855*a* shows the circuit of a telephone with a condenser installed in the receiver circuit for the purpose stated in your query. All that is necessary is that you open one side of your receiver circuit and cut the condenser in series with it.

If the condensers in your instruments are open circuited the trouble will soon make itself apparent, as you would then be unable to hear on the instrument thus effected, but should it become short circuited the trouble would not show. If you are in doubt as to whether any condenser is short circuited or not you can readily determine its condition by endeavoring to ring a buzzer with dry cells through the condenser. Connect a buzzer to one side of a dry battery and touch the other two terminals to the terminals of the condenser. If the condenser is short circuited the buzzer will operate, otherwise it will not.

A method of testing a condenser which is very useful at a

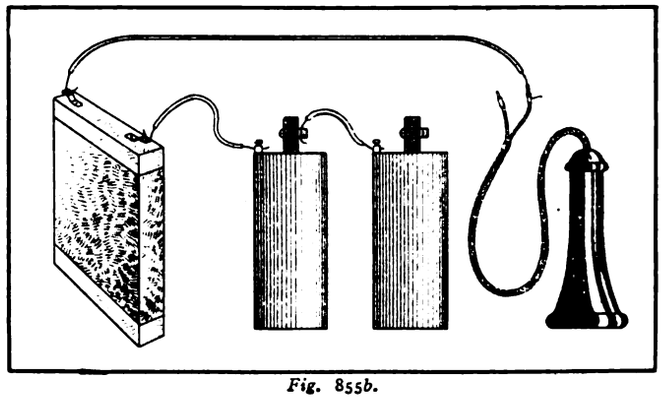

Fig. 855b.

station visited when the trouble man may not happen to have a buzzer is illustrated in Fig. 855*b*. All that is necessary is to connect the instrument battery, cells being joined in series, with one terminal of the condenser. The other condenser terminal can be connected by a short piece of wire to one side of the receiver, removed, with its cord, for making this test. While listening at the receiver touch its free terminal to the free terminal of your battery. You will hear a click. Then break the connection and make and break it rapidly several times in succession. If your condenser is good the only loud click you will hear in the receiver will be when you first make the contact. This is due to electricity flowing into the condenser to charge it to the same difference of potential as exists between the terminals of the battery. Once it is charged, if good, only an unappreciable current, due to what is sometimes called a "soaking in" effect, will flow when contact is subsequently made, completing the circuit.

If the condenser is poor—that is to say, short-circuited—you will hear a succession of loud clicks, one occurring every time the circuit is made, due to a direct flow of current through the condenser, which in this event takes place in the same way as through any other closed metallic circuit. The principle shown in the last figure may be utilized for testing the condenser installed in the instrument, without removing it or the receiver, by suitably connecting the battery.

TAKING STORAGE BATTERY OUT OF SERVICE.—(856.)

We have a private branch exchange system which we are going to take out of service for a few months and desire to have the battery elements in good shape when we are ready to operate this P. B. X. again. We understand there is some special way recommended for abandoning a storage battery, but do not recall exactly what it is at present. Will you kindly inform us on this point? H. H., Indiana.

To leave the plates in the best condition it is customary to charge the battery to its greatest capacity at the normal rate, then siphon off the acid into thoroughly clean carboys and immediately refill each cell with water. Then discharge the battery at the normal rate down to less than one volt per cell, after which remove the plates from the water and allow them to dry. After the jars have been thoroughly cleaned and dried, the plates may be again placed in them and stored in some dry, clean place until you have further use for them. The acid which is siphoned off may be used again.

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THE EDITOR'S PAGE

THE FOREST SERVICE INVESTIGATIONS OF METHODS OF CREOSOTE ANALYSIS.

CAREFUL and elaborate investigations of the methods of preserving wood have been carried on for some time past under the direction of the Forest Service division of the United States Department of Agriculture. The experiments which are now under way have a very direct and material interest to telephone companies, which are such large users of certain kinds of wood in the form of poles, cross arms and pins. Good timber for the manufacture of these supplies is acknowledged everywhere to be rapidly growing scarcer; existing supplies are found more and more remote from transportation facilities and are consequently more difficult to bring into the market, and so more expensive. This scarcity of timber is bound to increase as time goes on, and the only way in which telephone companies can meet the situation is to begin at once, if they have not already done so, to consider much more carefully than they have in the past the importance of methods for preserving the existing supplies after the timber comes into their hands.

Gifford Pinchot, Forester of the United States, calls attention in a recent letter to the efficiency of coal tar creosote as a wood preservative. Unfortunately in the production of this material at present the coals used present a great variety in composition, and there is a considerable difference in the various methods of preparing the substance on a commercial scale. As the creosotes of different compositions are believed to have different values as preservatives, it is very important that a company desiring to obtain the best results should be able to specify the exact proportions of the various constituent compounds which will insure the longest life to its wooden supporting fixtures. The only way in which the necessary facts to be used in such specifications may be determined is by an analysis of the different compounds, and experiments which will show their effects on the material in actual service.

Up to the present time no very large amount of study has been directed to perfecting methods of creosote analysis. The Forest Service, however, is now carrying on investigations of these methods. The most important part of creosote analysis is the fractional distillation, which gives an approximate idea of the relative proportions of the most important substances in the coal tar oil. There have been advanced different opinions by scientists who have studied the subject as to the best methods of carrying on this process. Some recommend a retort, others a flask, as a distilling vessel, and the proper temperature at which the fractions should be taken off has been the subject of varying and conflicting recommendations.

The Forest Service is very desirous of getting criticisms and suggestions of all users and manufacturers of creosote who have made careful observations of the results of different methods of analysis, showing the practical value of each process. With this object in view it has prepared a bulletin which gives a detailed account of the methods which were adopted in its experiments. Apparatus and methods used in the analyses are fully described, and the results obtained are indicated. Copies of this bulletin are available for distribution and may be obtained by those who wish to have it as a means of directing their own investigations or co-operating with the department, by writing to Gifford Pinchot, Forester, at the Agricultural Department in Washington.

This investigation is of such importance to the industry that all telephone engineers who have investigated the subject will see a distinct advantage in offering their hearty co-operation to the Forest Service in the important work in which it is now engaged for the benefit of telephone companies.

FOLLOWING UP COMPLAINTS.

PROBABLY there is no work for which a well regulated telephone company receives so little direct recompense for the efforts expended as that of following up service complaints. In spite of this the experience of every telephone manager who has been willing to give careful consideration to the matter is almost sure to have been of a nature to cause him to admit that all the thought, care and time put into this work have been far from wasted. In the long run they almost invariably do produce results which justify careful attention to this detail.

Of course, there is the "kicker" who must not be left out of the reckoning. The interesting individual who belongs to this class seems to think that the slightest error or inattention of an operator or the failure of a line to be at all times at his disposal and capable of giving most efficient service is a proper reason for calling up the highest official of the telephone company whom he can reach and making his protest in most vigorous terms. Still, perhaps it is true that, unlike a poet, the average kicker is made, and not born, and the telephone company must share the responsibility for his existence.

The telephone subscriber is not very adept at classifying troubles. Out of order is the only term that interests him. If his line is broken by a falling tree, or there is a poor contact in the relay at the central office, all he knows is that he is unable to get the operator. If enough of these things happen to occur in a week he makes a complaint of poor service.

After this, if he is the right sort of a man, he puts the matter out of his mind for a few days. Here is where the follow up idea comes in, and may be worked out to the advantage of the telephone company. When a trouble is cleared on which a complaint, as distinguished from a mere report, has been made by the subscriber, it is found to be an excellent plan to have some competent person explain in considerable detail the cause of the trouble, telling where the responsibility is placed, and explaining why the telephone company is subject to such difficulties in operation as those which have caused the complaint in question.

The result of this policy is two-fold. In the first place, it satisfies the subscriber that interruptions in his service, while they no doubt represent annoyance to himself, are equally obnoxious to the company from the most selfish point of view, and that it is bound to use every reasonable effort to limit their occurrence, and clear them up rapidly when they do make their appearance. The personal factor in this method of handling the situation operates equally to the company's advantage, as the attention the subscriber receives causes him to feel thoroughly satisfied with his treatment as an individual. In other words, he is put in the attitude of a friend between whom and the telephone company there have been some slightly unsatisfactory relations, which he will be glad to overlook on learning their true cause.

There is a limit to all things, and the satisfactory working of this plan depends to a considerable degree on a good operating and maintenance department. It would never do to follow up complaints from the same man too often!

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

CONDITIONS IN LOUISIANA FRANCHISES.

Being one of your subscribers, would thank you in advance for the following information: Our company applied to the town council for a franchise. We met with objections, as the town was supplied both with local and long-distance service; but, after much opposition, we were given a franchise, provided our company had telephone and switchboard in operation within ten days. We installed telephones and lines, but the railroads failed to bring our switchboard. We have not received, up to date, our switchboard, and the town issued an injunction against us proceeding any further in the town. Now, has the town the right to limit us to ten days? Also, had the mayor the power to enjoin us without authority of the Board of Aldermen? Have we a right for damages against the town?

W. P. TEL. CO.

THE law in Louisiana provides that telephone companies may construct and maintain lines when necessary along all State, parish or public roads, or public works, and parallel to any of the railroads of the State, and along and over the waters of the State, provided ordinary use be not obstructed, and along the streets of any city, with the consent of the council or trustees thereof. Revised Laws, 1897, section 696. According to these provisions of the statute the consent of the city council is necessary before you can construct your lines in the city streets. It is generally held that where a municipality's consent is necessary, it may be granted on such terms as the charters provide, and you having obtained a franchise on condition that your telephones and switchboards were to be in operation within ten days, it seems that the council could insist upon it. We do not think, however, that the mayor would have any right to institute injunction proceedings without the direction of the Board of Aldermen. If the suit was begun against you without authority, you would be entitled to sue upon the injunction for your damages.

WHEN RAILROAD COMPANY IS LIABLE FOR ITS INDEPENDENT CONTRACTOR'S INTERFERENCE WITH TELEPHONE LINE.

THE Batesville and Winerva Telephone Company, operating a line through the counties of Independence, Izard and Baxter in the State of Arkansas, constructed its lines on the north or east bank of the White River in 1901. Later in the year the White River Railway Company began the construction of its railway in the same locality. The telephone company alleged that the railway company, in the construction of its line, wilfully and unlawfully cut down and dug up about 560 of the telephone company's poles and tore down its wires for the greater part of the distance between Penter's Bluff and Syllamore in Independence County. It brought suit against the railway company for six thousand dollars damages. The defense of the company was that, if the telephone line was injured, it was the act of one Reynolds, who had a contract with the railway company for the construction of its railroad, and for whose negligence, or that of his sub-contractors, the railway company was in no way responsible. The railway company further defended itself by saying that it had surveyed its line of road and staked off its right of way before the telephone company built its line.

Passing on the case, the court held that neither of the defenses of the railway company was good. In the first place, the proof showed that the work contracted for by the company would necessarily result in injuring the telephone line. In such case the law would not excuse the principal from liability for the negligence of its independent contractor or sub-contractor. On the second ground of defense, the court held that the making of a survey gave the railway company no right in the land on which the telephone line was located, even if the line was built after the survey. It was not shown when the railway company acquired its right of way. A judgment of $550 for the telephone company was sustained. White River Railway Co. vs. Batesville and Winerva Tel. Co. (Ark.), 98 S. W., 821.

AMOUNT OF PROPERTY WRONGFULLY APPROPRIATED IS IMMATERIAL.

IF a telegraph company, over the objections and against the protest of the land owner, entered upon his land and dug holes and erected telegraph poles there without authority of law, the land owner is entitled to at least nominal damages, even if he does not show any actual damages. If the telegraph company desires to condemn land for its poles and wires a mode of determining damages is prescribed by law; but, if without any authority of law, it enters upon and appropriates land without any condemnation and against the will of the owner, it becomes a mere trespasser, and is liable in damages for the violation of the owner's right of property. Even if a very small amount of property was appropriated, the company would be liable if it attempted the appropriation whether it admitted liability or not. Postal Teleg. Cable Co. vs. Kuhnen (Ga.), 555 S. E., 967.

SILENCE GIVES CONSENT.

WHERE a woman stands by and sees her husband give a telephone company the right of way over her land and says nothing until after the building of the line is accomplished she is held to have consented to the granting of the right of way. This was the holding of the Circuit Court at Meridian, Miss., in the case of Mrs. Helen E. Perry vs. the Cumberland Telephone and Telegraph Company, in which she sued for $3,700 damages for trespassing on her property in putting up a telephone line. The plaintiff's testimony showed that the land belonged to Mrs. Perry and that the right of way was obtained from her husband while she was present. Mrs. Perry, herself, testified that she did not give her consent to the building of the line. A pole was even put in her dooryard. The court held that plaintiff, being present when the right of way grant was signed, should have objected then and not have waited until money was spent on the line. On this ground judgment was entered for the telephone company.

MUST REMOVE TELEPHONE POLES.

AT Newburg, N. Y., the Supreme Court, sitting without a jury, decided the case of George Beyer vs. the State Line Telephone Company. The company had erected its poles and strung its wires along the highway in front of Mr. Beyer's property without his permission, and he brought suit to recover possession. The company contended that it had the right to place poles in front of the property without the owner's consent, but this contention was overruled by the court, which held that the company must remove its poles.

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IN THE OPERATING FIELD

VERMONT AND NEW HAMPSHIRE ASSOCIATION EXPOSES "FAKE" INDEPENDENT COMPANIES.

G. W. BUZZELL, secretary of the Vermont and New Hampshire Independent Telephone Association, writes concerning recent events in his territory as follows:

"It appears from the heading of the following item that the Bell Telephone Company would like to make people think that it is operating Independent telephones. The enclosed item was clipped from the Montpelier *Daily Argus* of April 22, and I wish to state that part of this item, the heading in particular, is far from being true. The telephone companies named in this item are not Independent companies in any sense of the word.

"The Plymouth and Campton Telephone Exchange is a sub-licensee from the old parent Bell company. The Pike Telephone Company is a sub-licensee of the New England T. and T. Company; the Franconia Telephone Company is a sub-licensee of the New England T. and T. Company, and the balance are all Bell, pure and simple. I wish to make this correction in this item, as I understand it, so that the people will not be fooled by these sub-licensee companies, calling themselves Independent.

"The following is the item in question:

INDEPENDENT TELEPHONES.

PLYMOUTH, N. H., April 20.—The White Mountain Telephone and Telegraph Company, chartered by a special act of the last New Hampshire Legislature, was organized here with a capital stock, fully paid in, of $100,000.

The company has absorbed the Plymouth-Campton Telephone Exchange Company, with 100 subscribers; the Pike Telephone Company, with 300 subscribers; the Franconia Telephone Company, with 200 subscribers; the exchange of the New England Telephone Company at Woodsville, N. H., with 500 subscribers; the Bradford, Vt., exchange of the New England Company, with 100 subscribers, and some other minor lines of the New England Company in that section of Vermont.

The officers of the new company are: Directors, Gen. George H. Adams, of Plymouth; Nelson Bailey, of Wells River, Vt.; Ora A. Brown, of Ashland, N. H.; Allen Hollis, of Concord, N. H.; Charles J. Ayer, of Plymouth, and Henry W. Herbert, of Rumney, N. H. President, Allen Hollis, of Concord; treasurer, Davis B. Keniston, of Plymouth; general manager, Walter I. Lee.

"There is another deal of this kind reported on in Essex, Caledonia and Orleans counties, Vermont.

"The concern has been recently organized under the name of the Passumpsic Telephone Company, with 10,000 shares of stock at $25 each—a bait for the small investor. Why is the Bell disposing of its lines in this way? It looks as though it would rather have one-half the appraisal of its plants in money and then hold a majority of stock in the new company and let the other fellows do the fighting."

TELEPHONES IN THE FAR EAST.

CONSUL GENERAL D. F. WILBER reports that only one company is engaged in furnishing Singapore with telephones, and it has about 1,500 instruments. In Penang and in the Federated Malay states the government operates the systems. The instrument used is of the magneto type and is made in Antwerp, Belgium. Of these, Penang has 500 and the Federated Malay states 300. Singapore buys about 250 telephones annually, Penang 75, and the Federated Malay states 50. Thus far the service in Singapore is said to have been very unsatisfactory. Quite a large sum of money is being expended in improvements, placing wires under ground, rebuilding overhead lines, and other work.

INDIANA CONVENTION TO MARK TRIUMPH OF INDEPENDENTS.

THE second annual convention of the Indiana Independent Telephone Association, to be held in the Hotel Claypool, Indianapolis, May 15-16, will be the scene of some remarkably interesting proceedings. The telephone men are asserting with confidence that the meeting will mark in an unmistakable way the victory of the Independents in the Indiana field. Great interest is being taken in the convention, not only by Indiana telephone men, but by those of adjoining states, because it will be distinguished by the thorough and serious consideration of what will probably be an authoritative proposal by the opposition interests in the State. These relate to the plan of taking over some of the Bell company's exchanges and arranging with the representatives of that company for a division of the long distance business in consideration of the closing of its local exchanges.

There is apparently no doubt of the authenticity of the proposition for the deal by the Bell people, and while the Independents declare that it is nothing more or less than a distress signal, they are willing to submit the proposition to the State Convention, and if ratified will consider the terms of agreement. The Bell people do not deny having made the proposal, but say their intention and hope in doing so is to forestall future legislation, which is certain to enforce an interchange of business. They say it is advisable, therefore, for the rivals to get together before the law steps in and compels them to do so whether they are willing or not.

The executive committee of the Indiana association held a meeting in Indianapolis on the 25th ult., and discussed every phase of the proposition, and decided upon certain recommendations to be presented to the convention. The committee has not made public all of its recommendations, but it is learned from a reliable authority that the Independents will demand a surrender of all the local exchanges in the entire State with the possible exception of Indianapolis and Evansville; that the offer of 15 per cent. of all tolls originating on Independent lines will not be accepted, but instead 25 per cent. will be demanded. The Independents must also be left free to build new Independent toll lines where the Bell lines are not sufficient. The Independents say they now have every advantage, after a long fight, costing both factions millions of dollars, and while wishing to be fair with their adversary, they will not yield a particle of the advantage gained.

The programme for the convention has not been completed, but it is expected that the greater portion of the afternoon sessions will be devoted to the discussion of the proposition made by the opposition interests. Many prominent telephone men from all over the country will be present, and give their attention to the important matters to be considered.

WHEN IN DOUBT

About any question or idea, technical, legal or otherwise, consult AMERICAN TELEPHONE JOURNAL'S *staff of telephone men. Each is an authority in his particular line. Your salary-drawing ability lies not so much in what you have memorized as in knowing how to learn.*

The Query Department of the JOURNAL *is maintained to help you and all other telephone men, no matter what positions they occupy. Therein lies its value. Increase this value and your own, too, by asking practical questions whenever they occur to you. Tell your troubles to the Editor,* AMERICAN TELEPHONE JOURNAL, *100 William St., New York, and he will help you solve the problems.*

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"Information?"

QUESTIONS SHOWING THE DEMANDS MADE BY THE CURIOUS PUBLIC UPON THE KNOWLEDGE, TACT AND TEMPER OF A TELEPHONE OPERATOR IN A TYPICAL CITY EXCHANGE.

IN a certain telephone exchange which we will call Arcadia, because that is not its name, and because it is a very poor name for any telephone exchange, the information bureau clerks have kept a book of curious questions that have been asked over the wire. Arcadia is an exchange of about 10,000 telephones in a city of about 125,000 inhabitants. All the queer inquiries have not been set down because the information desk with two operators has been too busy to enter them. Many of the questions were answered, some were referred to telephones that should have been called, while others simply had to be passed over as best they could, being impossible of solution by human agency. The items that follow are not selected, but are put down exactly as the information bureau wrote them out, beginning in the year 1904.

"Information! Do you take orders to cart trunks around town?"

"Please tell me if the (S. S.) Baltic has arrived in port yet."

"Information! What is the night boat going out with a black flag on it for?"

Labor Day. "What time will the *Evening News* be printed today?"

Same day. "If a special delivery letter comes for me today will it be delivered?"

"Information! Give me the nearest telephone to a cab man."

"Information. Give me the number of the man on the hill in Southport with the flagstone walk around his house."

"Who carried the insurance on the broom factory?"

"Which road do you take to go to Mr. Smith's house in Northtown?" (A suburb about 10 miles distant.)

From a lady who is engaged in putting up pickles: "Information! How many tablespoonfuls of spice does it take to make an ounce?"

At 5:25 P. M. "Will you guarantee to deliver a message to the New York postoffice by 5:15 P. M.?"

"I've had my telephone two quarters, can you tell me how many calls I've had?" Referred to business office.

"What packing house is down on the water front opposite the railroad tracks?"

"I want to order some sweet crackers. Can I get them at the Philadelphia grocery?"

"Give me the agents for the next president of the United States on Main St." (Wanted Democratic headquarters.)

"Give me Mrs. Jones on B Street, opposite the church."

"Information! They gave me the name, but I forgot. It begins with H. How am I going to find it?"

"Is there a telephone at the corner of Franklin and Wood Sts., in Reading, Pa.?" (Only about 200 miles away.)

"Give me the C Street telephone."

"Will you please tell me if there is going to be a game between Columbia and any other team tomorrow?"

"I sent a message this afternoon from Albany to Springfield. Can you tell me if it has been delivered?" (Two cities that were miles away from Arcadia.)

"Information! I want this put on file! Central don't give me any kind of service. I ask for a number and she tells me 'busy.' Then I go down the street and call again and get it all right. I have a cold in my head and can't hear very good and have a sore throat also."

From the leading hotel: "Hello, central, send up a glass of whiskey to Room No. 6, will you?"

"Give me two numbers on C St., one is upstairs and the other down."

"Give me the number of the telephone in the farm house on the Southport road, going out from County street."

"Say! Do you remember what the number of the Elks' telephone was last year?"

"Information! How many acres in the Common?" (A park near the center of the city. This was looked up, for the same question has been asked several times since.)

"Hello, central, please send me the bill of fare."

"Can I pay my telephone bill today?" (The company would be pleased.)

"Information! Can I telephone to Europe? Can I telephone from New York to Europe?"

"I just received a special delivery letter. Did they send it from the Southport postoffice, or the Arcadia postoffice?"

"You tell Mr. Brown in the Horseshoe Building that I am on a job next door, and I want him to come up and see me."

"Which way is the parade coming tonight?"

"Is Tuesday (Election Day) a legal holiday?"

"Hey, Information, I'd like to get a whack at you." (Now, what do you think of that?)

"I think we subscribers should be charged 5c. for 15 minutes, instead of 15c. for 5 minutes, don't you?"

ILLINOIS INDEPENDENTS TO HOLD BIG CONVENTION AT SPRINGFIELD.

MAY 14th and 15th are the dates set for the convention of the Illinois Independent Telephone Association at Springfield, Ill. This is to be a big meeting and a lively one. Mr. C. B. Cheadle, secretary of the association, in referring to the meeting in a recent letter, states that "there won't be much oratory or fireworks, but a whole lot of live discussion. Miss Barnes, chief operator at Springfield, will conduct a school of instruction for operators. Mr. John F. Casey, traffic manager of the Kinloch Telephone Company of St. Louis, will give some exceedingly practical talks along the line of installation, care and management of switchboards."

Many other good features have been arranged for. A large attendance is expected and many of the best men in the State are to join in making the meeting a record breaker. Every one that can possibly do so should arrange to be at this meeting.

LOUISIANA STATE BOARD OF APPRAISERS INCREASES TELEPHONE ASSESSMENTS.

AT the completion of the session of the State Board of Appraisers for the State of Louisiana, April 18, it was found that the telephone property owned by the Cumberland Telephone and Telegraph Company had been materially increased in valuation. Not only were the assessments on real estate increased by very large sums, but the assessments on strictly telephone equipment were raised by large percentages. For instance, the assessment on the exchange in New Orleans was increased by 25 per cent. Poles on toll lines were assessed at $100 per mile, an increase of $40 per mile over the assessment of last year. Copper wire was raised from $30 to $50 per mile, while the assessment on iron wire was doubled, making the present figure $10 per mile.

WEST VIRGINIA INDEPENDENTS TO MEET AT WHEELING.

ON May 9th and 10th the members of the West Virginia Independent Telephone Association are to hold their annual convention at Wheeling, W. Va. Men from all over the State will take part in the discussion of important matters connected with the carrying on of their business, and take up plans for the more thorough development of the Independent systems of the State. Among those who will be present are President W. C. Handlan, of Wheeling; E. K. Hertford, of Charleston; John A. Howard, of Wheeling; F. B. Hall, Rochester, Pa.; Frank Hart, Pittsburg, Pa.; J. Walter Barnes, Fairmont; Lon H. Hutchinson, Huntington; J. W. Downs, A. C. Davis, of Parkersburg; T. B. Lee, of Pittsburg, Pa.

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TELEPHONE PATENTS

TELEPHONE SYSTEM.

Elmer R. Corwin, Chicago, Ill., patents (No. 845,056; dated Feb. 26, 1907; filed Oct. 20, 1906; serial No. 339,851) a telephone system.

This invention relates particularly to common battery telephones in which the transmitter is in series with the line and an impedance coil through which the battery current is fed to the transmitters. The inventor's aim has been to eliminate the click of the subscriber's receiver, when the hook switch was operated, due to the impedance coil forcing a portion of the current through the receiver. He therefore arranges to close the transmitter circuit before closing the circuit including the receiver and by using an impedance coil of lower resistance than the receiver circuit materially decreases the flow of current through the receiver.

TRANSMITTER DISINFECTER.

Orrin Henry Savage, New York, N. Y., patents (No. 840,662; dated January 8, 1907; filed June 17, 1905; serial No. 265,633) and assigns to Oakville Company, Waterbury, Conn., a telephone transmitter disinfecter.

This patent covers a form of disinfecter for attaching to the mouthpiece of a telephone transmitter. It is conical in shape, extending into the transmitter mouthpiece and so constructed as to permit of its retaining an absorbent material, saturated with some sterilizing solution, between the transmitter mouthpiece and its outer surface.

FIRE AND POLICE SIGNALING SYSTEM.

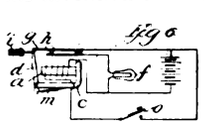
William Condon, Kansas City, Mo., patents (No. 848,636, dated April 2, 1907; filed July 7, 1902; serial No. 114,578) and assigns one-half to Albert Barrett, Kansas City, Mo., a fire and police signaling system.

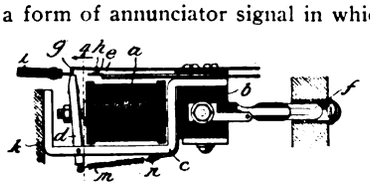
This patent covers a combined fire and police signal system in which either station may be called from the same box. It is also a combination of the indicating signal system commonly used and a telephone system. Registering devices are provided at both receiving systems, together with means by which one of the registering devices is actuated by either of the two receiving devices and the other registering device is actuated only when the receiving device which is responsive to only one of the two kinds of signals is actuated.

ANNUNCIATOR.

James L. McQuarrie, New York, N. Y., patents (No. 850,311, dated April 26, 1907; filed Oct. 2, 1905; serial No. 281,102) and assigns to Western Electric Co., Chicago, Ill., an annunciator.

This invention relates to a form of annunciator signal in which





the armature *d* is locked in position by the formed spring *g* upon the energization of the electro-magnet *a*, when thrown in circuit with the battery by the circuit-closing device *o*, and may not return to normal position until the retaining spring has been manually released.

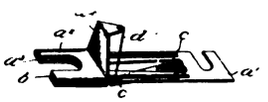
The armature is also held in the normal position by the spring *g*, so that it may not cause the circuit including the lamp signal to be closed except upon energization of the electro-magnet in the manner described.

The object of the invention is to provide an annunciator signal that will not be affected by the movement of the station at which it may be located, as, for instance, upon shipboard.

ALARM FUSE.

William E. Harkness, Chicago, Ill., patents (No. 850,365, dated April 16, 1907; filed Feb. 24, 1906; serial No. 302,667) and assigns to Western Electric Co., Chicago, Ill., an alarm fuse.

This patent covers a form of spring alarm fuse in which the surface terminal a^1 is provided with a spring *c*, which is an in-



tegral part of the terminal a^1. To the terminal a^2, which is insulated electrically from the terminal *a*, is electrically connected the spring *c* of the terminal *a* by the fuse wire *d*, which retains the spring *c* in a state of tension.

When a current of greater amount than is desired passes through the fuse it will open the circuit in the usual manner, releasing the spring *c*, which strikes a contact provided beneath the fuse, closing an auxiliary circuit in which is included an alarm signal.

RECEIVER ATTACHMENT.

Alcorn Rector, New York, N. Y., patents (No. 847,691, dated March 19, 1907; filed Nov. 24, 1906; serial No. 344,853) and assigns to himself, Daniel O. Sprague and Arthur P. Smith of New York, N. Y., a telephone attachment.

This device consists of an attachment for an ordinary telephone receiver, which may be placed between the receiver proper and the ear piece. The latter has two openings, one of the usual form of a telephone ear piece, and the other extending longitudinally from the side of the attachment, and is connected to a rubber tube leading into a second ear piece, attached to a spring, which is adapted to hold it close to the other ear of the person using the telephone. The inventor claims for this device that it obviates the possibility of foreign noises detracting a person's attention, as is customary where the receiver is used at one ear only.

TELEPHONE TRUNKING SYSTEM.

Francis W. Dunbar, Chicago, Ill., patents (No. 846,557; dated March 12, 1907; filed August 1, 1902; serial No. 117,923) and assigns to Kellogg Switchboard and Supply Company, Chicago, Ill., a telephone trunking system.

This patent covers an improvement over application of W. W. Dean, filed June 28, 1902, serial No. 113,581, of which the inventor says he contemplates accomplishing the same results by the use of an ordinary relay connected to one side of the trunk circuit at its incoming end and with ground as against a high resistance trunk relay, used by Mr. Dean, the function of which was to offer a path of such high resistance that sufficient current could not flow through it and over the metallic trunk line to operate a supervisory relay in the calling cord circuit to render the associated supervisory signal inoperative.

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THE DEADLY PARALLEL

AUTOMATICS VS. LEVERS

With GRAY PAY STATIONS you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

GRAY TEL. PAY STATION CO.

HARTFORD, CONN.

OUR '07 CATALOGUE SENT ON REQUEST

FOR SALE

For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

FOR SALE.—We offer for sale the following assortment of Stromberg-Carlson Central Energy telephones displaced by our installation of Automatic equipment:

250 Type E central energy desk telephones with stationary head, corrugated nickel-plated pedestal, black enamel metal base, bipolar receiver, gold electrode transmitter.

1,000 No. 204 desk telephones with adjustable transmitter, knuckle joint arm, nickel-plated pedestal and base, same transmitter and receiver as above.

100 Type C. E., latest style desk telephone with No. 4 transmitter, all rubber bipolar receiver, black rubber pedestal, nickel-plated base, induction coils at end of cord instead of in base. A modern instrument.

1,000 Former type ZZ, later known as No. 37, business style central energy wall telephones complete with triplet set consisting of combined switch-hook, transmitter with adjustable arm, bipolar receiver, etc. This instrument is provided with shelf.

100 Former type Z, later known as No. 35, residence style, central energy wall telephone without shelf, otherwise same as No. 37.

These instruments are in good condition and will be sold at a reasonable figure. Prices will be furnished upon application to W. F. LAUBACH, Manager, Akron People's Telephone Co., Akron, Ohio. 822

SECOND HAND switchboards for sale—2 100 capacity Chicago Telephone Supply Co.; 1 200 capacity and 1 100 capacity Western Telephone Construction; 1 100 capacity Swedish-American; 2 50 capacity and 2 100 capacity Eureka; 1 100 capacity Standard; 3 100 capacity Keystone; 3 200 capacity and 1 100 capacity North. Address Victor Telephone Works, 6583 State St., Chicago, Ill. 817

FOR SALE--Continued

FOR SALE—For immediate delivery, one 100-line Kellogg switchboard, one 100-line Standard switchboard (self restoring drops), 60 Kellogg Selective telephones. Guaranteed first-class condition. Address United Telephone Co., Monroe, Wis. 826

FOR SALE—Telephone system in growing county seat; good construction, 175 telephones, no competition; healthy country, growing business. Address Box 827, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 827

WANTED

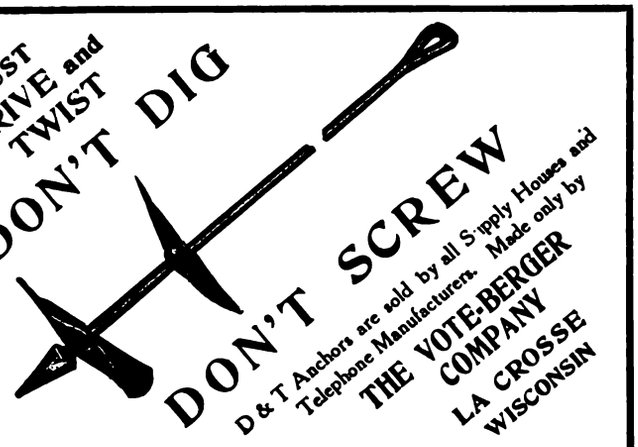
For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WANTED.—The management of an electric light plant where the business can be built up. Have had experience and can "deliver the goods" on any electric lighting proposition. Open for engagement after July 1, 1907. Address Box 816, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 816

WANTED.—Competent man as superintendent, also first class switchboard repair man. Good salary for first class man. None other need apply. Address, Box 821, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 821.

WANTED—To get in communication with a telephone promoter who has made good in organizing telephone properties. We have a very attractive proposition for a capable man. Address, Box 824, care AMERICAN TELEPHONE JOURNAL. 100 William street, New York. 824

WANTED—Competent cable splicer. Position permanent. Send references. Address, Zenith Telephone Co., Duluth, Minn. 809



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Write To-day for Samples and Prices. Toll Bills. Rental Bills.

Form G-90.	For Small or Branch Exchange use; carries account for 2 years.
Form G-90-A.	For Large and Medium City Exchanges and Systems of Exchanges; the most complete form made.
Form G-90-B.	For City Exchanges having many Rural Lines.
Form G-90-C.	For City Exchanges, Rentals and Toll Charges separated
Form G-90-E.	For Small Exchanges, Rentals only.
Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
Form G-90-H.	One subscriber to a sheet; carries account 12 years.
Form G-90-I.	For Small Exchanges; Bound Books; carry 12 subscribers on a page for 1 year.

THE Edwards-Hine Co.

TELEPHONE SYSTEMATIZING DEPT.

5 and 7 PEARL STREET (EAST), GRAND RAPIDS, MICH., U. S. A.

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PATENTS—Continued

TELEPHONE TRUNKING SYSTEM.

William W. Dean, Chicago, Ill., patents (No. 843,871; dated Feb. 12, 1907; filed July 19, 1902; serial No. 116,148) and assigns to the Kellogg Switchboard and Supply Co., Chicago, Ill., a telephone trunking system.

This patent covers a form of telephone trunking between common battery exchange switchboards of the two-wire type. The trunks are operative in either direction in relation to signaling, that is the insertion of a plug in the jack at either end causes the actuation of a relay which in turn closes a circuit, causing a lamp to glow, which is cut out of circuit when the call is taken up at the opposite end. The regular supervisory lamps on the switchboard cord circuit described are adapted to perform their regular functions when in connection with the trunking system.

SPRING TERMINAL CLIP.

John Schade, Jr., Brooklyn, New York, patents (No. 845,268; dated Feb. 26, 1907; filed April 28, 1905; serial No. 257,948) and assigns to Fahnestock Electric Co., Brooklyn, N. Y., a spring terminal clip.

This patent covers a fastening device for electrical conductors in which the conductor is gripped securely by suitable spring arrangements obtained by making the device of resilient metal looped on itself. The inventor illustrates in his patent drawings ten different forms of the device, all covered by the same claims.

TELEPHONE SWITCH.

Fred Edwards, Jefferson, Iowa, patents (No. 841,491; dated Jan. 15, 1907; filed May 9, 1905; serial No. 259,645) a telephone.

This invention consists of a switch so arranged that a subscriber may, for any desired reason, open the battery circuit of his instrument, thus cutting out his transmitter and enabling him to listen to any conversation on the line without the interference of noises that would otherwise be taken up by his transmitter, and also economizing on the power secured from his local battery.

The switch is so arranged that the replacing of the receiver upon its hook causes the contacts in the switch to close automatically.

PARTY LINE LOCK-OUT SYSTEM.

Charles L. Carr and Thaddeus P. Carr, Yellow Springs, Ohio, patent (No. 847,316; dated March 19, 1907; filed October 10, 1904; serial No. 227,977) a party line lock-out system.

This patent describes a form of step-by-step selective lock-out system of the magneto type in which the switchboard operator actuates a device throwing pulsating current on the line to operate suitable relays in the telephones. These cause the rotation of discs, which interact with the fixed contact springs to complete the circuit of the instrument desired, but leave the other instruments on open circuit.

TELEPHONE DETECTOR.

Arnold R. Piehn, Alta Vista, Iowa, patents (No. 848,568, dated March 26, 1907; filed March 31, 1906; serial No. 309,136) a telephone detector.

This invention comprises a device installed in the telephone by means of which the central office operator is notified of the number of the subscriber in relation to his position on a party line, for the purpose of properly charging long distance tolls or other purposes. The intention is to have the device automatic in operation and so constructed that the subscriber can not hold conversation previous to the notification of the operator of the telephone number. To insure this feature a button is provided, the pressing of which operates the indicating device, and so arranged that the subscriber must press it in order to secure connection.

TELEPHONE HOOK SWITCH.

Ray H. Manson, Elyria, Ohio, patents (No. 850,870, dated April 16, 1907; filed May 9, 1904; serial No. 207,004) and assigns to Dean Electric Co., Elyria, Ohio, an electrical switch.

The inventor describes a receiver hook so mounted with its associated contact springs, on a specially formed standard that the hook may be readily removed from the switch as attached thereto without the use of tools and without disturbing the relations of the operative portions of the switch. The manner in which this is accomplished may be readily

Fig. 1.

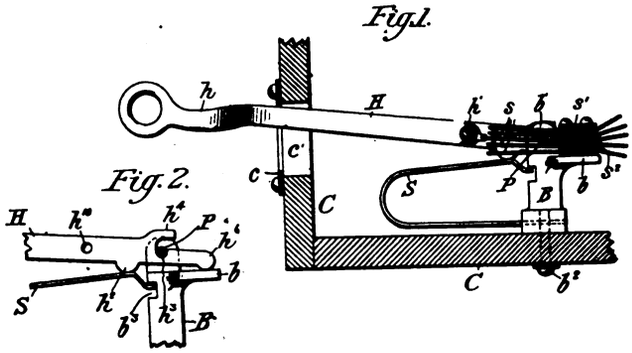

Fig. 2.

seen in Figure 2. By depressing the spring S and allowing the hook H to drop so that the pivot P will take position in the upper portion of the slot h^3 the hook may be freely removed by a slight pull. It may also be noted that the downward movement of the hook is controlled by the spring S in the notch b^5 while the upward movement is governed by the striking of the hook extension h^6 on the lateral projection b of the standard B. The insulated stud h^1 is provided to engage with one of the springs of the switch so that raising or lowering the hook will operate the switch which is mounted in its entirety on the lateral projection b.

ACOUSTICON ATTACHMENT.

Kelly M. Turner, New York, N. Y., patents (No. 839,050; dated Dec. 18, 1906; filed April 9, 1906; serial No. 310,617) an attachment for acousticons permitting use of ordinary telephones.

This device consists of a cylindrical attachment by means of which, the acousticon transmitter as worn by deaf persons, may be clamped to the face of an ordinary telephone receiver, the deaf person thus receiving the conversation through the acousticon receiver, to the use of which he is more accustomed.

MODULATING TELEPHONE RECEIVER.

Kelley M. Turner, New York, N. Y., patents (No. 848,073, dated March 26, 1907; filed Jan. 13, 1906; serial No. 295,834) a modulating telephone receiver.

This invention describes a device comprising a cap for a telephone receiver within which is mounted what the inventor terms a dampening pad so arranged that by slightly moving a lever varying degrees of pressure may be exerted on the diaphragm of the receiver, thus modifying the intensity of the tone of the instrument. The application specified by the inventor is that the volume of sound may be modulated so as to give the best results to a deaf person in using receivers of the acousticon type which primarily have a large volume.

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The Iron Wire Ballast

To Regulate

AMOUNT OF CURRENT RECEIVED IN SUBSCRIBERS' TRANSMITTERS.

¶ Subscribers' transmitters located close to exchange receive their full voltage and therefore talk adequately Transmitters located at a distance from exchange receive greatly diminished current on account of line resistance, and talk a great deal less strongly and clearly than when located near the exchange.

¶ By inserting the *V-B Iron Wire Ballast* in the transmitter feed in the exchange and increasing the central battery voltage, practically the same transmission qualities can be given to telephones located at a distance from the exchange that are given to transmitters near the exchange.

¶ The Ballast will be of low resistance when placed in series with the lines whose resistance would protect the transmitter, therefore high voltage in the exchange will give these transmitters their full supply of current, and *their fullest efficiency.*

¶ If the ballast is placed in series with the transmitters in the exchange, the resistance of the ballast will increase instantaneously, and protect the transmitter from getting an over supply of current. In other words, *the transmitters will always receive their full supply of current and none of them can receive enough current to injure them.*

¶ THE VOTE-BERGER COMPANY, La Crosse, Wisconsin, sole owners of the V-B Iron Wire Ballast Patents, are now prepared to make immediate deliveries on ballasts equipped either with Edison bases, or flat terminals for transmitter circuits or operator's ringing leads.

¶ A line from you, addressed to Department C, THE VOTE-BERGER COMPANY, La Crosse, Wisconsin, will bring you complete and interesting information regarding the various applications of the iron wire ballast.

¶ If you contemplate purchasing a common battery switchboard, do not delay sending in your plans or specifications. Sales engineers of THE VOTE-BERGER COMPANY will call upon you if you so desire.

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IN THE MANUFACTURING FIELD

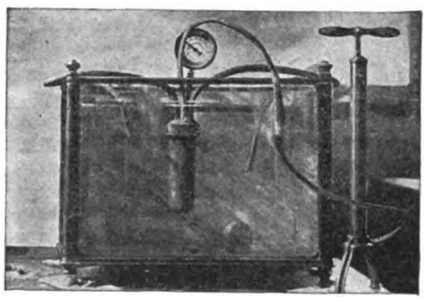
"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

TESTING A CABLE JOINT.

THE manufacturers of the Hargis cable splicing joint have been asked by one or two telephone companies whether it was absolutely moisture proof. To satisfy themselves that it was impervious to moisture, they made the following test:

An ordinary goldfish tank was procured and filled with clear water. A No. 2 Hargis cable splicing joint was connected up to three cables, making a regular three-way branch joint. A pressure gauge was attached and also a pipe to which a foot pump was connected, as shown in the illustration made from a photograph taken during the test.

By operating the foot pump considerable air pressure was obtained on the inside of the joint. If there was any place for moisture to enter the air under pressure would surely escape and show itself by the bubbles that would appear coming up through the water. This simple and convincing test is recommended to those who have any little doubts about the moisture resisting qualities of Hargis cable splicing joints. For further information in regard to these joints write to W. N. Matthews & Bro., 242 North Second Street, St. Louis, Mo.



Apparatus Used for Testing Hargis Cable Joint, Ready for Service.

DEAN ELECTRIC CO., Elyria, O., has recently received many important switchboard orders, among which are the following: From Sheboygan, Wis., a common battery multiple, 3,000 ultimate capacity switchboard, equipped with 1,260 lines and 20 rural lines; a chief operator's desk, wire chief's desk, intermediate frame, relay rack, complete power plant and Dean harmonic converter for ringing. The installation includes individual ringing keys on each position of the board. The Sheboygan board has the Dean line and cord test on each position.

Fulton, N. Y., has ordered a Dean common battery multiple 2,000 ultimate capacity switchboard with 560 lines equipped, a chief operator's desk, main frame and relay rack, and complete power plant, including the Dean harmonic four-party ringing outfit. This board also has cord and line test on each position.

Berea and Carey, Ohio, and Point Pleasant, W. Va., each have ordered magneto switchboards arranged for 450 lines, 300 lines and 400 lines, respectively. These shipments also include Dean full harmonic converter equipment for ringing.

A contract has been let to the Dean Company for a new switchboard for Colusa, Cal. This board will be a 1,500-line ultimate capacity standard common battery multiple switchboard equipped with 300 lines. A combined toll and chief operator's desk, wire chief's desk, main and intermediate frames, relay rack, complete power plant and standard harmonic ringing equipment go with this order.

COMMERCIAL ELECTRICAL SUPPLY CO., St. Louis, Mo., calls the attention of its customers to the importance of buying electric fans before the price has advanced with the coming of warm weather.

The company also has in stock at St. Louis a very full line of rubber-covered and lead-covered wires and cables. Price and other information will be forwarded promptly to all inquirers.

THE PREMIER ELECTRIC CO., formerly at 118-132 West Jackson Boulevard, Chicago, Ill., removed on May 1st to 141 South Clinton street, Chicago.

This company is well known as a manufacturer of electrical braided goods and cords and wires for telephone purposes, Premier "B.B." switchboard cords, telephone receiver desk set and transmitter cords, switchboard receiver cords, braided cotton sleeve and jumper wire.

In its new location it will have much improved facilities for handling its rapidly increasing business. The company is able to give prompt attention to orders from any part of the country. It will be pleased to explain the characteristics of its various products to telephone men who are able to visit its new offices or by mail on receipt of a request.

S. H. COUCH CO., 156 Purchase street, Boston, Mass., manufactures complete apparatus for intercommunicating systems. The company's bulletin No. 9 gives detailed descriptions of the apparatus and wiring used in the systems which it recommends. It has an intercommunicating system for offices, factories, hospitals, residences, etc. The type of apparatus used is such that trunk connection with the central office may be obtained if desired. For instruments, various types of wall sets, including those which may be set flush with the surface, may be used, and the switch is also mounted in the base of a desk stand.

MANHATTAN ELECTRICAL SUPPLY CO., 17 Park Place, New York, is issuing a new catalogue showing a very complete line of telephone and telegraph apparatus. Illustrations and prices of all apparatus are given. This company supplies complete telephones and all classes of minor supplies, such as batteries, cords, tape, insulators, construction material, tools, etc., which are required in telephone work. Any desired information will be sent upon receipt of a request.

JULIUS ANDRAE & SONS' COMPANY, 99 West Water street, Milwaukee, Wis., has recently received an order for a supply of its patented form of condenser from Honolulu, Hawaiian Islands. This shows the widespread reputation that this little "party line purifier" has attained. A great many companies are using these condensers, which may be very quickly put in service without cutting into the inner circuits of the instruments.

INDIANA STEEL & WIRE CO., Muncie, Ind., is ready for the man from Missouri, as it not only claims that its wire is manufactured in such a way as to give it the highest strength and conductivity together with permanent galvanization, but it has had these properties tested in the laboratories of several of the leading universities of the Middle West. The results of these tests are published in a very neat booklet which the company is sending out to the trade. Persons interested in the qualities of high-grade iron wire should not delay in sending for this booklet before the supply is exhausted.

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY, Rochester, N. Y., reports the receipt of signed contracts up to March 30, 1907, as follows: Four sections 980 additional line equipments, Des Moines, Ia.; 1 section 240 lines central energy visual signal series multiple switchboard, Brookville, Pa.; 1 section 2-position toll board equipment, Mt. Pleasant, Ia.; 4 sections 700 additional line equipment, main exchange, Seattle, Wash.; 2 sections, 300 additional line equipments, Queen Anne Exchange, Seattle, Wash. Central energy P.

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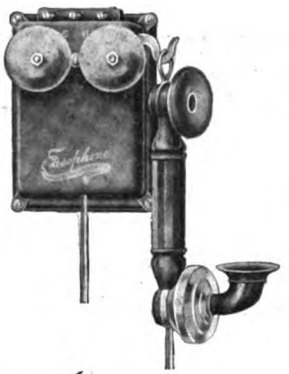
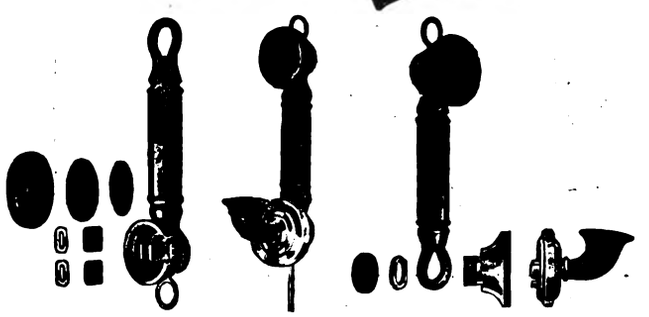
The Subscriber sees that they are Convenient, Efficient and Attractive.

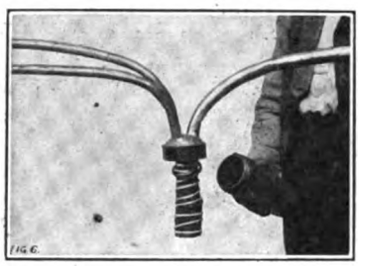


The Exchange Manager sees Lowest Maintenance Cost, Increase in Number of Subscribers, Demand for Hand Telephone.

Easophones

The WIRE and TELEPHONE COMPANY of AMERICA
ROME, N.Y.





TROUBLE!!

When you have found that the trouble in your telephone cable is in a certain joint, it is not necessary to blow the joint or cut the sleeve when you use HARGIS CABLE SPLICING JOINTS. Just take your pair of spanners, unscrew the pot from the ring, unlace the pairs and spread them out like a fan. You can then test the pairs with greater ease than you can with a horizontal wiped joint, on account of the ease in getting at the inside pairs. You don't have to go all over the work again of soldering a seam in your sleeve and wiping the ends of a joint when the repair is made; just screw the pot on the ring and tighten with spanners and you have a perfect joint.

Absolutely moisture proof. Made in three sizes. Costs less on first installation. Saves money while in use. Send in your order to-day.

W. N. MATTHEWS & BRO.

MANUFACTURERS OF PATENTED
MONEY SAVING SPECIALTIES

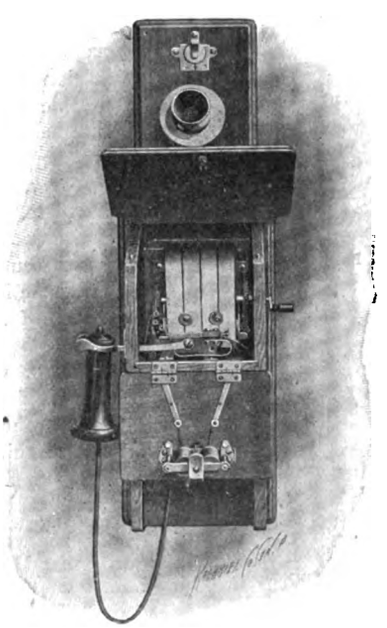
214 N. Second St. **St. Louis**

NEW YORK SAN FRANCISCO

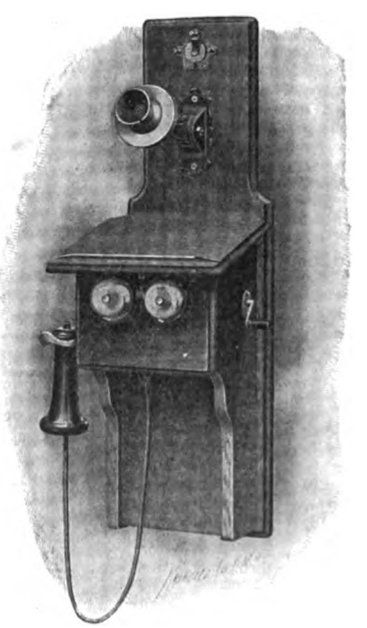
COMMON BATTERY TYPE CABINET MAGNETO PHONES

Sumter Standard Parts—with a few useful features the other fellow hasn't got yet

GET BULLETIN 41



WRITE TODAY



1907 MODEL

THE SUMTER TELEPHONE MFG. CO. ... SUMTER, S. C.

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IN THE MANUFACTURING FIELD

B. X. switchboards have been ordered in Louisville, Ky.; Franklin, Pa.; Leavenworth, Kans.; Port Washington, Wis.; Fairport, N. Y.; Fort Wayne, Ind.; Hammond, Ill.; Magnolia, Ill.; Seattle, Wash.; Buffalo, N. Y.; Brackenridge, Pa.; Harrisburg, Pa.; Rochester, N. Y.; Minier, Ill.; Eden, Ill.; Goldonda, Ill.; Arcanum, Ohio, Joy, Ill.; Garfield, Ky. Other orders are from Kershaw, S. C.; Jones, Mich.; Cleopatra, Mo.; Keokee, Va.; Venus, Pa.; Mt. Etna, Ia.; Dresden, Tenn.; 3 generator call switchboards, Seattle, Wash.; 4 generator call switchboards, Sunnyside, Wash.; Pomona, Ill.; Peck, Idaho; Cul de Sac, Idaho; Des Moines, Ia.; Madison, Wis.

W. G. NAGEL ELECTRIC CO., Toledo, O., in the April number of *Electrical Times*, has a number of items especially interesting and useful to Independent telephone men. One of these for example, is a table of equivalents of wires, B. & S. gauge, showing how many wires of different small sizes have the same carrying capacity as a single wire of a larger size. This would be useful as a reference to those who have to do with telephone power plants. Another table giving very complete information about commercial copper wires, 98 per cent conductivity, is also printed in this issue. As usual the Nagel current price summary appears in this number, which will be sent free of charge to any telephone man who asks for it.

THE STRENGTH OF BIRCH INSULATOR PINS.

IN many parts of the country telephone men have been looking for a wood which could be satisfactorily substituted for locust, which is probably most commonly used for insulator pins.

The Maine Hub and Manufacturing Company, West Seboois, Me., believes that it has in its birch pins a substitute which will make a strong appeal to many construction men. It has had its product tested in the well-equipped laboratory of the Armour Institute of Technology, with the results indicated in the following report:

ARMOUR INSTITUTE OF TECHNOLOGY, CHICAGO.
F. W. GUNSAULUS, President.

OCTOBER 7, 1905.

Maine Hub and Manufacturing Co.,
West Seboois, Me.

Gentlemen: The following results were obtained in tests of birch insulator pins. The sketch shows the manner of applying load, and of holding specimen.

Dimensions (referring to sketch).

	Nos. 1 and 2. Inches.	Nos. 3 and 4. Inches.	Nos. 5 to 10 Inches.
L	4 7/8	3 7/8	4 7/8
d	1 1/4	1 1/4	1 1/2
D	1 5/8	1 5/8	1 3/4
S	4	4	4
l	4.40	3.57	4.40

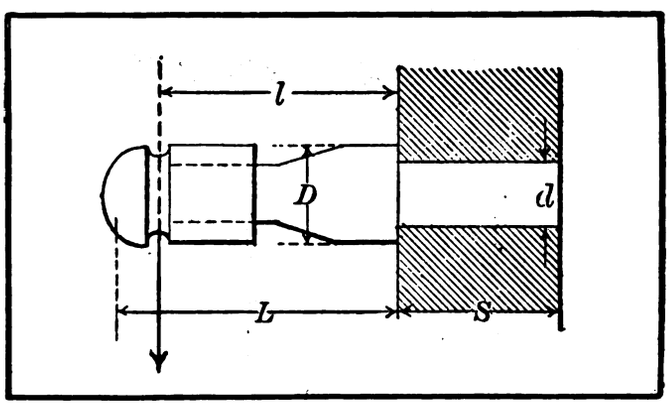
No. of Specimen.	Direction of Force.	Maximum load in Pounds.
1	1 with grain	890
2	2 across grain	900
3	2	925
4	1	1050
5	1	870
6	2	1320
7	1	1100
8	2	1310
9	1	815
10	2	1350

The broken specimens, marked as above, have been returned to you by express.

Yours very truly,
(Signed) R. BURNHAM,
Professor of Experimental Engineering.

The company is prepared to send out further and more complete information, and give some interesting prices to those who wish to follow up the subject.

BAY STATE INSULATED WIRE AND CABLE CO., Hyde Park, Mass., announces the completion of its extensive new wire mills, and states that it is now ready to manufacture insulated wires and cables of every description. The capacity of the mills is at present 500,000 feet per day; with additional machinery under construction that will enable the company to turn out twice as much work. The president, Mr. Andrew J. Conlin, was for the past eighteen years superintendent of the plant of the Simplex Electrical Co., at Cambridge, Mass., and, having held other positions of importance in the manufacture of insulated wire, is looked upon as an authority in this particular line. The treasurer



Explanatory Diagram Accompanying Prof. Burnham's Report on Test of Birch Insulator Pins.

and manager, Mr. John H. H. McNamee, formerly Mayor of Cambridge, Mass., will look after the company's financial and business interests. Mr. Alfred W. Worthley is in charge of the sales department, which he will be well able to handle, having been associated formerly with the Eastern Electric Cable Co. The company intends to furnish its customers only the best of material, prompt deliveries and reasonable prices. It will be pleased to answer all inquiries.

GENERAL STORAGE BATTERY COMPANY, 42 Broadway, New York, has just issued a bulletin on the installation and operation of transportable batteries, which covers this ground in an especially clear and thorough manner. The directions show just what to do from the time the batteries are received, packed in boxes, through the various operations of unpacking, connecting, adding the electrolyte, first charge and subsequent use of the batteries. This information should be very useful to every telephone man located in a central energy exchange. Any manager who desires a copy of these instructions should write at once to the Operating Department of the company.

BAIRD MFG. CO., 1522 Briar Place, Chicago, Ill., is sending out a folder bearing a legend which ought to appeal to every telephone man, namely: "Your troubles end here." Of course, the thing that brings this about is the new Baird Cash-Register Pay-Station which is explained in the balance of the folder. Interested persons can find out just how this will end their troubles by writing to the company.

BLAKE SIGNAL AND MANUFACTURING CO., 246 Summer street, Boston, Mass., has established the following agencies for the Blake tube flux: George F. Schoen, 108 South Forsyth street, Atlanta, Ga.; Syles R. Fralick, 269 South Canal street, Chicago; Wesco Supply Company, St. Louis, Mo.; Brooks-Follis Electric Corporation, 212 First street, San Francisco, Cal.; the Erner and Hopkins Co., Columbus, O., and Norton System Telephone Company, Toronto, Can.

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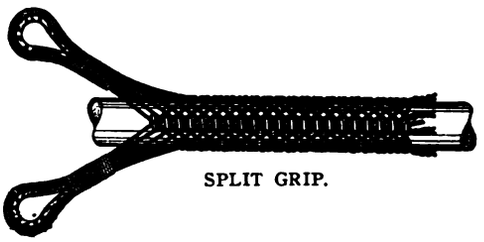
Universal Cable Grips

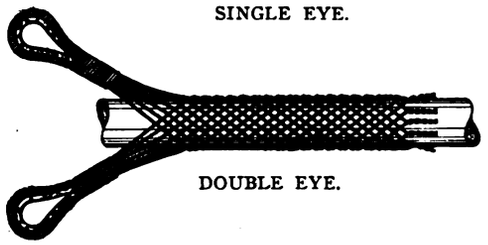
Grasp the cable securely and without abrasion.
Are readily attached and removed.
Effect a large saving in time and material over methods usually employed.
Cable pulled out, slack pulled in, or cable broken at mouth of duct pulled out without difficulty.

MADE IN THREE STYLES.



SPLIT GRIP.

SINGLE EYE.



DOUBLE EYE.

THEY EVERLASTINGLY PULL

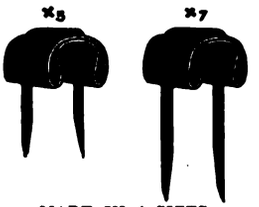
Write for One To-day—Prices Anyway.

UNIVERSAL CABLE GRIP CO.

SYRACUSE, N. Y.

Western Agents:
Illinois Electric Co., 239-241 Madison St., Chicago.

Blake Insulated Staples



MADE IN 4 SIZES.

ECONOMICAL—SAFE

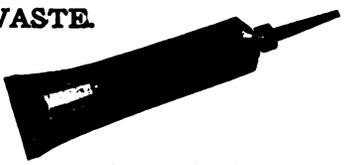
Cost less than the screws used in cleat wiring and have good driving qualities.

Bare metal does not come in contact with the wires, thus no short circuits or grounds are caused by driving staple over both wires.

Samples, for the asking, will convince you of their worth.

BLAKE TUBE FLUX

NO WASTE.



The exact amount of flux needed just where you want it is possible by use of the Blake Tube Flux. Can be carried in the vest pocket. Is handy, clean and economical.

Secure a trial tube. Postpaid, 20 cents.

BLAKE SIGNAL & MFG. CO.,

246 SUMMER STREET BOSTON, MASS.

Talks With The Buyer—No. 7

Publishers of trade papers have a grudge against me. One of them said the other day: "Why in the world don't you take more space, when other houses much smaller are advertising more? A house that ranks as you do in volume of business should have one page at least." Perhaps he is right, but I believe that if you are interested you will read my "talks," whether they are spread over two pages or boiled down to a half page. What you want is the kernel in the nut.

ANOTHER WORD ABOUT TELEPHONES

If we don't get into our new factory pretty soon I will have to cut these ads. out altogether, because our present factory is having to run day and night to fill our orders and keep up our reputation for prompt shipments. I got a letter a couple of days ago from a man, who said: "I would like to try your 'phones, but my electrician seems wedded to the ——phone. You may ship two samples." The very day another man called who was using the same make and gave me a contract for his year's requirements because the transmitters on the other make were falling down on him, yet extensively advertised as the standard from which all others are judged. Why are so many of you partisan toward one or another make of instruments? Because a certain make was a good instrument five years ago, is there one single reason why it should be the best instrument to-day? We may have eclipsed with our recent improvements the best efforts of that company whose equipment was standard last year or the year before. So do not judge our apparatus until you have tried our samples, instruments which are not special in any sense, but are from finish of woodwork to magnet steel our average standard product.

We do not give away samples; we do not offer to sell a sample pair of instruments for half the regular value as an inducement. I do not want you to buy our 'phones if we have to offer you an inducement save in honest values. You are standing in your own light to-day, now, and every minute, until you write me ordering sample 'phones sent you absolutely at our own risk and without obligation on your part to keep them unless absolutely satisfactory to you in every way.

THE SALES MANAGER.

Central Tel. & Electric Co. Makers of High Grade Apparatus. Dealers in Telephone Supplies **St. Louis and Dallas, U. S. A.**

Please mention THE AMERICAN TELEPHONE JOURNAL when writing to ADVERTISERS.

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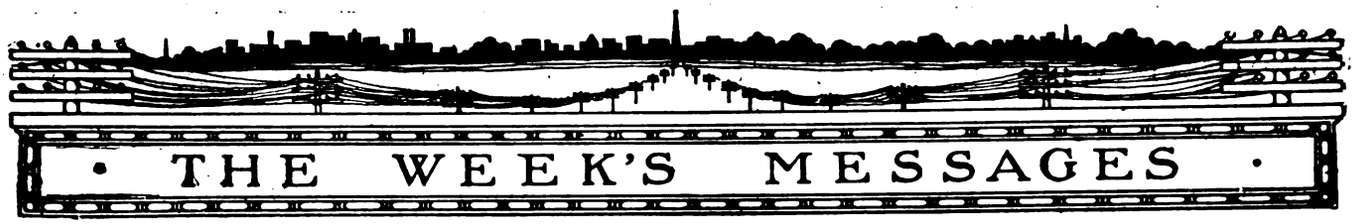

NEW COMPANIES.

MAGNOLIA, ARK.—A new telephone company, to be known as the Magnolia Telephone Company, has been organized with R. L. Morris as president and Gus Kohn as secretary and treasurer.

FISHER, ILL.—The Farmers' Telephone Company is being organized at Fisher.

DALE, IND.—Articles of incorporation have been filed by the Farmers' Mutual Telephone Company, of Dale. It has an authorized capital stock of $10,000, and the incorporators are C. W. Randolph, John Wibbeler, John Meier, Wesley Painter and John Ellis.

FOREST, IND.—The Forest Telephone Company, with a capital stock of $4,950, has been incorporated.

MOUNT VERNON, IND.—The St. Philip Telephone Company, St. Philip (P. O. address Mount Vernon), has been incorporated, with a capital stock of $2,000, and the following directors elected: Fred Kirchoff, Frank Neff, G. J. Ehrhardh, I. E. Hartig and J. A. Deig.

RUSSIAVILLE, IND.—The Russiaville Co-operative Telephone Company has been incorporated with a capital stock of $5,000. The directors of the company are Albert Lindley, O. L. Evans, J. E. Waters and others, and it is its intention to build and equip an exchange at this city and to extend its lines throughout Howard, Clinton and Tipton counties.

CURLEW, IA.—Articles of incorporation have been filed by the Laurens-Curlew Telephone Company, whose principal place of business will be at Curlew. It has an authorized capital stock of $5,000, and the following officers have been named: President, H. P. Johnson; vice-president, J. W. Johnson; secretary and treasurer, H. H. Sample.

DALLAS, IA.—The Dallas Mutual Telephone Company has filed articles of incorporation. The corporation is to last for twenty-five years, and its intention is to build and maintain a line west of Dallas. The capital stock is placed at $1,000, and the incorporators are J. A. Miller, A. H. Hartz, H. W. Willis, J. H. Friday and W. M. Hoffman.

WESLEY, IA.—A Independent telephone company, to be known as the Wesley Rural Telephone Company, has been incorporated at this city. The capital stock has been placed at $2,000, and O. K. Floran and others are among the stockholders.

MADISON LAKE, MINN.—A number of farmers between Madison Lake and Janesville have organized a Farmers' Telephone Company, whose intention it is to construct a line from Madison Lake to Janesville, at which place it will connect with the Cannon Valley system. It will also give service to St. Clair and Cream.

BUTLER, MO.—The Mount Pleasant Mutual Telephone Company, Butler, has been incorporated, with a capital stock of $2,400. Among the incorporators are T. N. Ervin, E. D. Wilcox, Fred Church, M. C. Wilcox and others.

MONIDA, MONT.—Articles of incorporation have been filed by the Centennial Telephone Company. It has a capital stock of $20,000, divided into 2,000 shares of the par value of $10 per share. R. T. Boatman, of the Centennial Valley, is president; A. B. Wakefield, vice-president; P. I. Smith, of Dillon, secretary and treasurer. It is the intention of the newly organized company to construct and maintain a telephone line between Monida and Lakeview, through the Centennial Valley.

RAMSEUR, N. C.—The People's Telephone Company, of Ramseur, has been incorporated with an authorized capital stock of $20,000, and the incorporators are E. Watkins, J. W. Parks, N. F. Marsh, H. B. Moore, J. I. Lambert, W. D. Lane and M. E. Johnson.

HOWELL, O.—The Rankin Creek Telephone Company, of Howell, with a capital stock of $1,000, has filed articles of incorporation. Among the incorporators are Newton Kite, J. H. Thomas, Martin Langdon, Vance Kite and Grover Carrico.

OKLAHOMA, OKLA.—An Independent telephone company, to be known as the Twin Creek Telephone Company, has been incorporated with a capital stock of $5,000. The incorporators are J. P. Petrasek, W. P. Reding and N. Y. Reding.

VICI, OKLA.—The Vici Rural Telephone Company has been incorporated, with a capital stock of $5,200, and the following directors elected: O. W. Hauser, D. J. Schramburg, E. A. Speck, of Vici.

ULYSSES, PA.—An Independent telephone company, to be known as the Ulysses-Loucks Mills Telephone Company, has been organized to build a line between Ulysses and Loucks Mills. It is also the company's intention to later extend its lines to Galeton.

WEST ALEXANDER, PA.—The Farmers' Mutual Telephone Company has been organized, and it is its intention to connect with a number of farmers' lines in Benham and Dallas.

ORANGEBURG, S. C.—A new telephone company has been organized at this city for the purpose of building lines to Bowman. It has a capital stock of $2,000, and is to be known as the Orangeburg-Bowman Telephone Company. Construction work will be commenced at an early date.

PLEASANT VALLEY, TENN.—The Pleasant Valley Telephone Co. has been incorporated with a capital stock of $5,000.

CHILLICOTHE, TEXAS.—The Independent Telephone Company, of Chillicothe, with a capital stock of $2,500, has been incorporated by F. L. Moffett, W. O. Herring, J. C. Lane, W. H. Pepper and G. R. Jones.

WELLINGTON, TEX.—Articles of incorporation have been filed by the Union Telephone Company, of Wellington. It has an authorized capital stock of $2,000, and the incorporators are J. T. Littlefield, A. Burger, H. A. Jones, V. Allen and P. W. Myers.

PASSUMPSIC, VT.—The Passumpsic Telephone Company, whose intention it is to operate in Essex, Orleans and Caledonia counties, has been incorporated with a capital stock of $250,000.

COLBY, WIS.—The Colby & Southwestern Telephone Company has filed articles of incorporation. It has an authorized capital stock of $600, and the incorporators are Louis F. Frome, Henry A. Frome and A. K. Andrews.

FOND DU LAC, WIS.—The Woodhull Telephone Company, Lamartine (P. O. address Fond du Lac), has been incorporated, with a capital stock of $2,500. Among the incorporators are J. A. Stratz, Frank Schaefer and O. S. Fenner.

JEFFERSON, WIS.—The Jefferson Mutual Telephone Company, Jefferson, has been incorporated with a capital stock of $10,000. Among the incorporators are R. B. Hellen, J. M. Bienfang and O. F. Roessler.

FRANCHISES.

TALIHINA, I. T.—M. C. Morris and others have applied to the city council for permission to install a telephone exchange and system in this city.

ELLSWORTH, KAN.—A twenty-year franchise has been granted to the Ellsworth Co-operative Telephone Co. to install and maintain a telephone system in the city of Ellsworth.

LANSING, MICH.—The common council has granted the Citizens' Telephone Company an amended charter, and the installation of its new system will be completed within a year. The company is also to erect a new building.

ST. HILAIRE, MINN.—A franchise has been awarded by the city council to G. W. Hooper, of Crookston, for a local telephone system, and work will be commenced on the plant at once.

EUREKA, S. D.—A telephone franchise has been granted to the Farmers' Mutual Telephone Company to erect and maintain telephone lines in this city.

FINANCIAL.

CARMI, ILL.—The capital stock of the White County Telephone Company has been increased to $25,000, and the increase in capital is to be used to improve the company's plant.

MINIER, ILL.—The Mutual Telephone Company has increased its capital stock to $38,000.

POLO, ILL.—The Polo Mutual Telephone Company has increased its capital stock from $5,000 to $10,000.

ANNANDALE, MINN.—At the annual meeting of the Annandale Telephone Company a seven per cent dividend was declared, payable June 10.

BERLIN, O.—The Berlin Telephone Company has increased its capital stock from $4,050 to $25,000.

CLEVELAND, O.—The Citizens' Telephone and Message Company has increased its capital stock from $50,000 to $100,000.

NEWS—WANTED

THE matter contained upon the message and Operating Field pages of this paper is contributed largely by our special correspondents. We believe, however, that there are many valuable items of telephonic interest which are never brought to the attention of the public. There is no reason why this condition should exist, and the Editor, therefore, invites all telephone companies and the officials of such companies, to furnish any information that they can consistently make public relative to financial statistics, new construction, elections, franchises and personal items.

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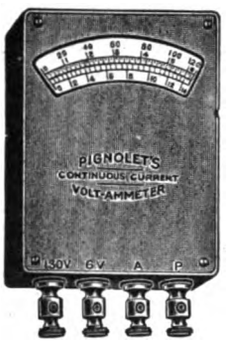
TO BE FOREWARNED IS TO BE FOREARMED



If you are not using a measuring instrument to test your lines, get one at once, as you will need it many times before the summer comes. It would be just as sensible for a grocer to try and sell sugar by guessing at its weight as it is for you to try to locate a fault in a line by the same method. PIGNOLET VOLT-AMMETERS are designed to give the best results required for testing purposes. They are not complicated nor do they require experts to operate them. Another point in their favor is their low cost. There is no instrument on the market which will give you as accurate results at anything near the price. Hadn't you better write for prices and further particulars By buying one now you will save its cost many times over before you have had it a year.

LOUIS M. PIGNOLET, Originator of the Voltmeter Habit

78 CORTLANDT ST., N. Y.

MICHIGAN WHITE CEDAR POLES

We have a large stock of White Cedar Poles of all sizes, concentrated at a point on the D. & M. R. R. in lower Michigan, from which we can make prompt deliveries. The location of this stock offers exceptional facilities for shipments to all points in Ohio, Indiana, Southern Michigan and the Eastern States. Write us for delivered prices on any size for immediate shipment.

KELLOGG SWITCHBOARD & SUPPLY CO.
CHICAGO, ILL.

Our Price is Right

1st TELEPHONE MADE

with all connecting wires, binding posts and terminal screws fully concealed

To Prevent Trouble

and with no exposed metal parts in the circuit to

Avoid Danger

from lightning while using the instrument. Send us your inquiry and we will "SHOW-U" at our expense an interesting proposition.

INTERNATIONAL TEL. MFG. CO.
Harrison and Clinton Sts., Chicago

Fort Wayne Electric Works

"WOOD" SYSTEMS

Installation of Telephone Booth Fan Motor.

Can You Hear

the man at the other end of the line just as well, when the fan is running in a telephone booth? You can if it's a Fort Wayne Telephone Booth Fan Motor—They're noiseless. This is no idle statement—It's a fact and we want to show you. Shall we? Just write us.

Other Sales Offices — Main Office: FORT WAYNE, IND. — In Most Large Cities

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THE WEEK'S MESSAGES

MEDINA, O.—The capital stock of the Medina Telephone Company has been increased from $30,000 to $44,500.

SARDINIA, O.—The People's Telephone Company, of which J. N. Plummer is president and F. L. Weisbrodt secretary, has increased its capital stock from $5,000 to $15,000.

THURSTON, O.—The capital stock of the Buckeye Lake Home Telephone Company has been increased from $10,000 to $30,000. The increase in capital will be used in new construction work. The company expects to extend its service through the northern townships of the county, and lines will be extended also as far north as Kirkersville.

BARTLETT, TEXAS.—At its annual stockholders' meeting the Bartlett-Walburg Telephone Company declared a dividend of ten per cent for the past year.

ATHENS, WIS.—The capital stock of the Athens Telephone Company has been increased from $750 to $6,000.

GRANTSBURG, WIS.—At the annual meeting of the St. Croix Mutual Telephone Company, held at this city, the capital stock was increased to $6,000.

COMBINATIONS.

ONEIDA, ILL.—The four county telephone companies have consolidated and formed one company, and the following directors have been named: A. F. Hannam, A. J. Miller, A. D. Metcalf, G. L. Stephenson and J. F. Epperson.

GRANTSBURG, WIS.—The Farmers' Independent Telephone Company has made a five-year contract with the Tri-State Telephone Company for exchange service.

ELECTIONS.

LAWN RIDGE, ILL.—The following officers have been elected by the Lawn Ridge Telephone Company: Chas. Timmons, president; F. H. Cornell, secretary and treasurer; P. E. Phillips, manager.

ITHACA, N. Y.—At a meeting of the recently incorporated Cayuga Southern Telephone Company the following officers were elected: President, Samuel Jeffrey; vice-president, Isaac P. Hazard; secretary, R. B. Fegan; treasurer, G. W. Jeffrey. The following were chosen on the executive committee: Samuel Jeffrey, R. B. Fegan and Isaac P. Hazard, Jr.

NORTH HANNIBAL, N. Y.—The North Hannibal Telephone Company has elected the following officers: President, Ralph Stark; secretary, C. S. Lockwood; treasurer, E. A. Pearce. Directors: A. B. Keeney, F. E. Babcock, Frank Lathrop and Jos. Albring.

BARTLETT, TEXAS.—The following officers have been named by the Bartlett-Walburg Telephone Company: W. T. Cox, president; J. E. Comdra, vice-president; D. R. Irvin, secretary, treasurer and general manager.

THURSTON, O.—The following directors have been elected by the Buckeye Lake Home Telephone Company: Daniel Mauger, Daniel Wagner, William Reinshield, John Palmer, W. T. Kemp, Clarence Lamb and George Haver.

MISCELLANEOUS.

POLO, ILL.—At a meeting of the representatives of the Independent Telephone Companies of District No. 2, of Northern Illinois, held at Polo, April 25, 1907, the following delegates were chosen to attend the state convention, to be held at Springfield, May 14 and 15: Chas. Segerlund, L. A. Herrick, G. E. Shoemaker, A. C. Biesemeir, F. M. Yokum, H. Wales, S. Kenedy, W. P. Landon, G. W. Pitcher, W. H. Glascow, L. S. Bowen, F. Zinnell, Geo. Mallendy, L. A. Pitcher, E. N. Howell, T. C. Ainsworth, A. G. Hawlew, R. H. Gibboney, B. F. Swab.

WILLIAMSTOWN, KY.—The Williamstown and Owenton Telephone Company has been acquired by the Citizens' Telephone Company, of Cincinnati. It is expected that the new owners will greatly enlarge the system, which already reaches three county seats with its main line, and into almost every village in Grant, Owen and Pendleton counties. The consideration is said to have been $15,000.

PERSONAL.

FREDERICK W. CHAPMAN has recently been appointed manager of the exchange of the New England Telephone and Telegraph Company at Milford, Mass.

J. ARTHUR CONE has been appointed manager of the exchange of the Wisconsin Telephone Company at Appleton, Wis.

S. C. CRANDALL has been elected secretary and treasurer of the Westfield Telephone Company, Westfield, N. Y., and will also have active management of the system.

JOHN KEARNS has been appointed superintendent of the newly organized division of the Pacific States Telephone and Telegraph Company, which has its headquarters at Oakland, Cal.

A. J. MILLER has been appointed manager of the Zinnel Telephone Company's exchange at Milledgeville, Ill.

J. D. NELSON has been appointed manager of the exchange of the Southwestern Telephone and Telegraph Company at Belton, Texas.

L. J. VAN ALLEN has been appointed manager of the Central Union Telephone Company's exchange at Warren, Ohio.

GEORGE S. REINOEHL has been advanced from the management of the Reading exchange of the Pennsylvania Telephone Company to the position of chief clerk to the general manager at Harrisburg, Pa.

New Construction in the Field

BRYANT, ILL.—The lines of the Bryant and Dunfermline Telephone Company are being improved and extended.

HEBRON, ILL.—The Farmers' New Era Telephone Company, of this city, has planned many improvements in its system. An exchange has been purchased at Genoa Junction, Wis., and lines are to be built in Racine, Kenosha and Walworth county. An exchange is also to be established at Wilmot, and from this point lines are to be extended to Silver Lake, Camp Lake, Trevor, Salem, Wheatland, Bassett's Station, Corliss and Burlington.

LEXINGTON, ILL.—The Independent Telephone Company is making plans for the erection of a two-story fireproof building near its present location, which it expects to occupy about the first of August. Manager L. F. Hyneman will have charge of the improvements in the plant, which include the installation of a considerable amount of underground cable in the downtown district, as well as the rebuilding of the exchange.

RUSHVILLE, IND.—A new exchange building is to be erected by the Co-operative Telephone Company.

ARDMORE, I. T.—The Merchants & Planters' Telephone Company is building a line from Orr to Marietta. The new line will pass through Petersburg, Rubottom, Courtney, Leon, Jimtown, Burneyville and Pike.

NOBLE, IA.—The lines of the Wayland Telephone Company are being overhauled.

TREYNOR, IA.—Lines from Treynor, covering the territory north, west and south from the town are to be constructed by W. J. Way, who also expects to establish an exchange at this city. It is his intention also to take over part of the Mineola line.

CHARLOTTE, MICH.—It is the intention of the Eaton County Telephone Company to make many improvements in its system.

GAYLORD, MICH.—Among the extensions planned by the Otsego County Telephone Company is a line from Gaylord to Frederic.

SARANAC, MICH.—The construction of new lines is being considered by the Citizens' Telephone Company.

VERMONTVILLE, MICH.—The lines of the Citizens' Mutual Telephone Company are to be extended in and about Vermontville.

WATKINS, MINN.—Many improvements are contemplated by the Watkins Telephone Company in its plant.

CREIGHTON, NEB.—The Camp Dewey Telephone Company, which operates lines in all parts of Knox and Boyd counties, contemplates the erection of a new exchange in this city.

ELKO, NEV.—The Elko County Telephone & Telegraph Company is planning many improvements, among which may be mentioned the institution of a new and up-to-date magneto metallic circuit system on all its lines, the building of new lines from Beowawe to Tenabo, which will connect with Elko, and the installation of an exchange at Wells.

GASTONIA, N. C.—The Piedmont Telephone & Telegraph Company is considering the advisability of making many improvements in its system.

RALEIGH, N. C.—The Raleigh Telephone Company is building a line from this city to Lake Forest.

ELIDA, O.—It is the intention of the Elida Mutual Telephone Company to install a new switchboard and otherwise improve its system.

BEAUMONT, TEX.—To accommodate its greatly increased business, the Beaumont Telephone Company intends to enlarge its plant at this city.

BURNSVILLE, W. VA.—A line from Claysville to Burnsville is being constructed by the Burnsville & Claysville Telephone Company.

BARRON, WIS.—It is the intention of the Barron County Telephone Company to extend its system from Rice Lake to Barron. A new circuit between the county seat and the metropolis of Barron county is also to be erected.

WALWORTH, WIS.—The lines of the Walworth Telephone Company are being extended in this city.

WAUSAU, WIS.—The Wausau Telephone Company contemplates many improvements and extensions in its system.

LINDSAY, ONT., CAN.—The Canadian Machine Telephone Company is making preparations to begin construction work in Lindsay.

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M. P. OSBORNE & SON
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Northern Electric and Machine Co., Brooklyn, New York. Selling Agents.

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YELLOW PINE OR CYPRESS
DIRECT FROM MANUFACTURERS
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Canadian Cedar Telegraph, Telephone and Electric Light Poles
All lengths, always in stock and shipped direct from our yards in Canada.
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White Cedar **POLES** Large Stock 14 to 65 ft. Prompt Shipment
YARDS: Menominee, Mich. Escanaba, " Superior, Wis. Deer River, Minn.
FRANCIS Beidler & CO. Chicago, Ill.

POLES AND PILING
Chestnut, Red Cedar and Cypress
Lengths 16 to 65 feet
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MEMPHIS, TENN.

CHESTNUT—CEDAR—CYPRESS
POLES and PILING
CRESCENT LUMBER CO.
WHITFIELD BLDG., PITTSBURGH, PA.

WHITE CEDAR POLES Longest Lasting Best Grade
OUR NEW STOCK COMING IN 100,000 TO 150,000 BY APRIL 1st
26 YEARS HAVE WE BEEN PRODUCING POLES. WRITE US
Yards { Omer, Bay City and Boyne Falls **W. C. Sterling & Son Co., Monroe, Mich.**

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FOR NEXT YEAR GET THE BEST
That's Our "New Form"
Many companies are now using it, and all are pleased. Ask for circular describing it. Order early and avoid the rush.
WE ALSO FURNISH

Toll Tickets.	Trouble Tickets.
Toll Journals.	Rental & Toll Bills.
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All kinds of blanks, books and forms for Telephone and Toll Line Accounting. Write for sample forms and prices.
TELEPHONE PRINTING COMPANY
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WHITE CEDAR POLES.
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POLES
20 and 25 foot lengths for rural telephone lines a specialty.
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POLE STEPS AND POLE SEATS
We Galvanize by the Hot Process
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RED FIR CROSS ARMS
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THE VALENTINE-CLARK CO.
ERNEST L. CLARK, PRES.
234 LA SALLE ST., CHICAGO.

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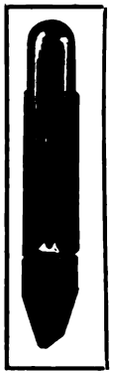
General Electric Company

Edison Telephone Lamps



34 Volt Tipless Bulb Lamp.

Thorough uniformity of all Lamps. No Misfits.

Light Maximum for Minimum Power Consumption.

It pays to use the EDISON

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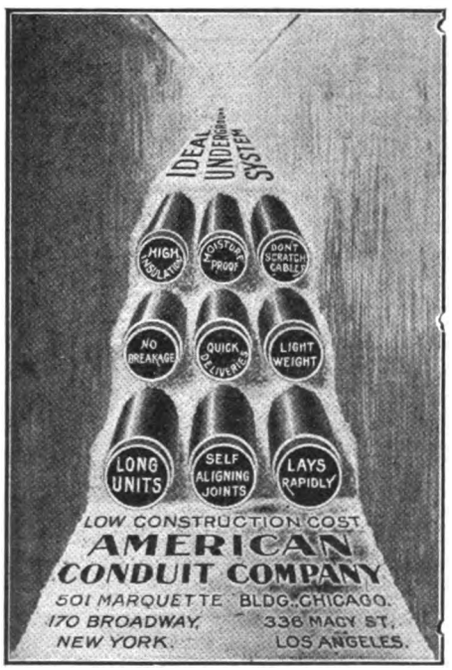
EDISON DECORATIVE AND MINIATURE LAMP DEPARTMENT, Harrison, N. J.



Couch

Manufacturers of

The "Couch" Automatics

S. H. COUCH CO., Inc., 162 Pearl St BOSTON, MASS.

The Celebrated

DONNELLY CLIMBER

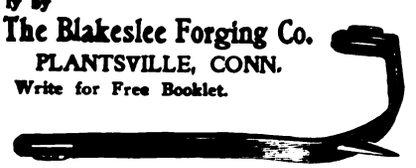
is made of the toughest and best steel obtainable. It is guaranteed not to break. You can trust your life to it with perfect safety.

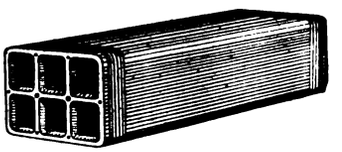
The Donnelly climber is now made exclusively by

The Blakeslee Forging Co.

PLANTSVILLE, CONN.

Write for Free Booklet.





WE KNOW HOW

to make conduits, because we have had thirty-five years' experience and employ the most approved methods. The buyer of our conduits can depend upon their being as good as can be made—every one of them. All thoroughly vitrified by our own process.

ASK US ABOUT IT

ROCHESTER SEWER PIPE COMPANY

550 Oak Street ROCHESTER, N. Y.

BEWARE OF IMITATIONS

For the protection of our customers we advise that Klein's Pliers are being imitated to LOOK LIKE KLEIN'S. This, however, does not make them Klein's. CAUTION. Look for this stamp, M. KLEIN & SONS, on the inside of handles—NONE are genuine without this stamp.

Use only genuine Klein's. They are the product of years of experience and have stood the test of time.

MATHIAS KLEIN & SONS - CHICAGO, ILL.

New Weston Instrument

SEND FOR BULLETIN NO. 6.

MULTIMETER, Modol 58

A high-grade, compact, portable Universal Testing Instrument, combining in one instrument the purposes of a direct current Voltmeter, Milli-Voltmeter, Milli-Ammeter, Ohmmeter, Ground Detector and Wheatstone Bridge.

Have your address entered in our Mailing List for other New Instruments to follow.

Weston Electrical Instrument Co.

Waverly Park, NEWARK, N. J.

SAMUEL G. McMEEN KEMPSTER B. MILLER

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ENGINEERS: CONSTRUCTORS

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MONADNOOK BLOCK CHICAGO

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ENGINEERS CONTRACTORS

TELEPHONE ENGINEERING AND CONSTRUCTION

Plans, Specifications and Estimates Promptly Furnished

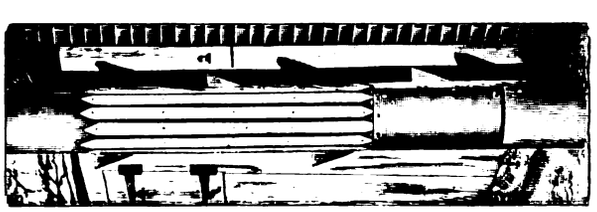
First National Bank Building CHICAGO, ILL.

MUST BE RUBBED IN

Advertising, like liniment, doesn't do much good when applied with a feather. It needs to be rubbed in for results. Apply it through the right mediums to the right people at the right time, and keep on rubbing it in until returns begin to come. Then still keep on rubbing.—*Jed Scarboro, in Profitable Advertising.*

In Advertising Lies Success for You and Yours, But Not In Advertising Lies.

Butt Guards and Pole Protection Strips



Hallett Butt Guard & Pole Protecting Strip.

Our butt guards are heavy enough to withstand hard knocks, yet elastic enough to admit of being bent into place on any sized pole.

HALLETT IRON WORKS

Manufacturers of Pole Line Hardware.

92-96 West Polk Street CHICAGO, ILL.

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SOAKED IN WATER NINE DAYS

WORKS AS WELL AS EVER

This is the unsolicited statement of Mr. Price, Manager of the SHARP COUNTY TELEPHONE CO. of EVENING SHADE, ARK.

This is what he says:

EVENING SHADE, ARK., March 23, 1907.

WESCO SUPPLY CO., St. Louis, Mo.

Dear Sirs:

I received a card not long since from the ——— Telephone Co. stating an accident occurring to one of their telephones. Now, I had an accident near Evening Shade in which I lost one of the Wesco Bridging Telephones in the river. The telephone was under water 9 days when it was recovered and dried out. The varnish is still good except the box looks white. All the workings are all right except the induction coil, which had to be replaced. Outside of the looks and a little mud to be cleaned from the workings, the Telephone is O. K.

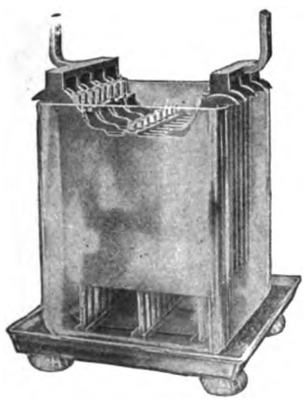
I am carrying it around as a show and test instrument.

Yours very truly,
C. C. PRICE, Manager.

Send for our New Bulletin No. 75 and get our prices on WESCO HONOR-MADE TELEPHONES.

THE WESCO SUPPLY CO.

FT. WORTH, TEX. ST. LOUIS, MO.



CLAIMS FULFILLED

Viewed from the standpoint of scientific theory, no other storage battery plate can compare, detail for detail, with the Gould Integral Plate. Many of the largest Telephone Companies in the United States have purchased Gould Storage Batteries on the *very apparent* merit of our battery. It is a most significant fact that in almost every such case *repeat orders* have followed the first test order. The Gould Battery has succeeded because it has made good our claims for its unusual merit and economy.

Write for our catalogues.

SALES OFFICES
Boston—89 State St.
Chicago—Rookery Bldg.
San Francisco—Monadnock Building
Toronto Ont.—62 Wellington St., West

Gould Storage Battery Co.

MAIN OFFICES
341-347 Fifth Avenue, New York City
Works, Depew, N. Y.

HAVE YOU A MAN

who keeps a party line in an uproar by his continual rubbering? Put a "POOLE" Lock-Out on him. You can put it on but one 'Phone on the line and it will lock that fellow out when the line is busy. The rest of the line can be left as it is. Try a dose of the "knock-killer."

Full particulars for the asking. Let us send you booklet AL-2.

MOUNTAIN STATE ELECTRICAL CO., Wheeling, West Va.

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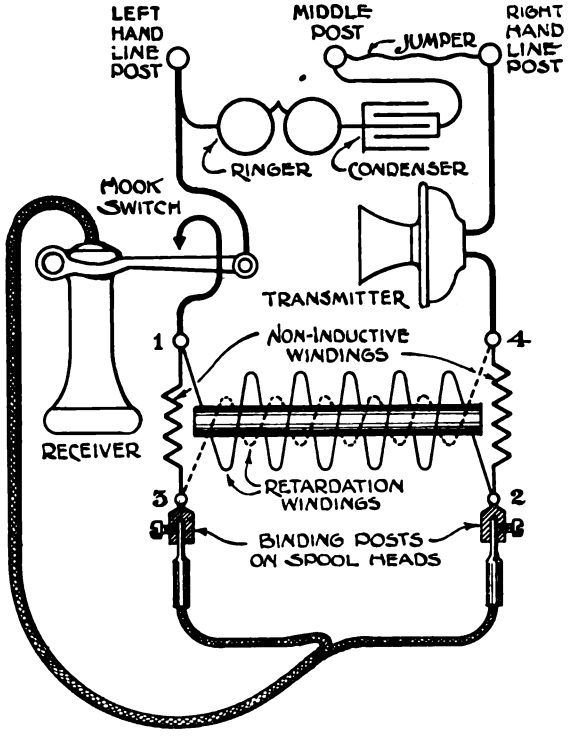
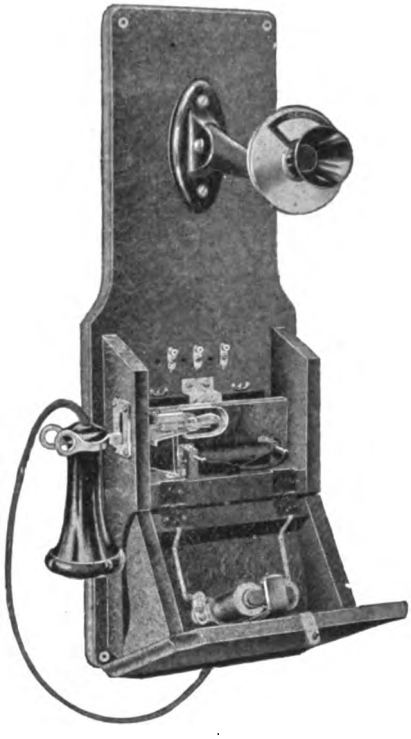
DEAN TELEPHONE APPARATUS

THE CIRCUIT.

The wiring of our common battery telephone with the balanced wheatstone's bridge coil as employed in actual practice shows at a glance to the experienced telephone engineer why the Dean instrument excels all others. This Circuit arrangement keeps the direct current flow from the receiver preventing demagnetization of the receiver magnets, yet at the same time allowing the voice currents, which are alternating in effect, being received at their maximum value.





THE INSTRUMENT.

The closed cabinet of our common battery telephone covers all working parts as well as all circuit connections so there is no possible danger of electrical shocks, or chance for instrument trouble. The shelf is made to unlock and allows the front part of the telephone to swing down on hinges, fully exposing all working parts for inspection. These telephones like all Dean wall type telephones have our removable lever hook switch.

Address Department B for valuable information on these instruments.

Factory and General Office
Elyria, Ohio

Branch Office
Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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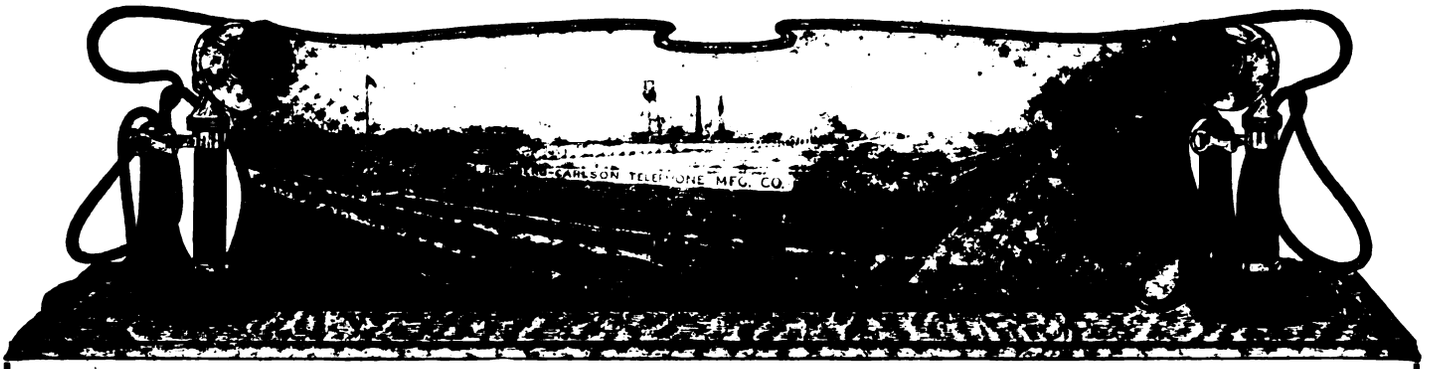


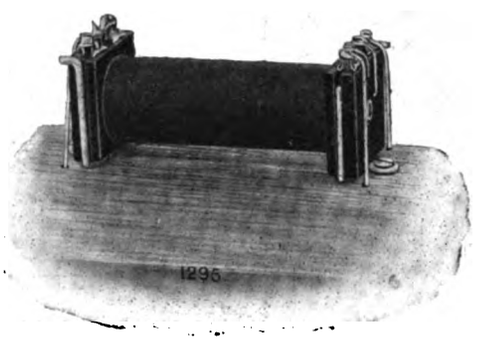
"STROMBERG-CARLSON"

COMPACT TYPE AND "CENTRAL ENERGY" STYLE

BRIDGING TELEPHONES

ARE EQUIPPED WITH

The "Stromberg-Carlson" Generator Call Induction Coil



NO. 20A INDUCTION COIL.

This subscriber's induction coil is one of the most efficient and important parts of a "Stromberg-Carlson" Bridging Telephone.

The large amount of noise produced by an induction coil on short line transmission does not necessarily mean good transmission over long distance lines. The annealed iron wire core and copper windings of our local battery induction coil are so proportioned that transmission over long distance lines is A MAXIMUM FOR CLEARNESS.

The impedance caused by the magnetic leakage produced by the secondary winding of the induction coil in series with the receiver, when the telephone is used for receiving, is kept a minimum, THEREBY PRODUCING VERY HIGH EFFICIENCY AS A RECEIVING INSTRUMENT.

The mechanical construction of the core, primary and secondary windings and spool heads are the best that can be made. The primary winding consists of **Double Silk Covered tinned copper wire**—the secondary consists of **Single Silk Covered Copper Wire**—each layer accurately wound by turns (automatically counted), with layers separated and insulated from each other by one and one-half turns of **oiled paper.** Entire winding is covered by book-binders' cloth. All ends of windings are terminated on tinned metal terminals mounted on spool heads.

Induction Coils mounted in Bridging telephones are held in place by self-adjusting clamps fastening tightly in grooves in each spool head.

The **No. 20-A Induction Coil is first in order of merit** for transmitting and receiving.

We solicit your orders for immediate requirements.

Write either office for prices to-day.

"Central Energy"

Stromberg-Carlson Telephone Mfg. Co.

Rochester, N.Y. · · · Chicago, Ill.

"Central Energy"

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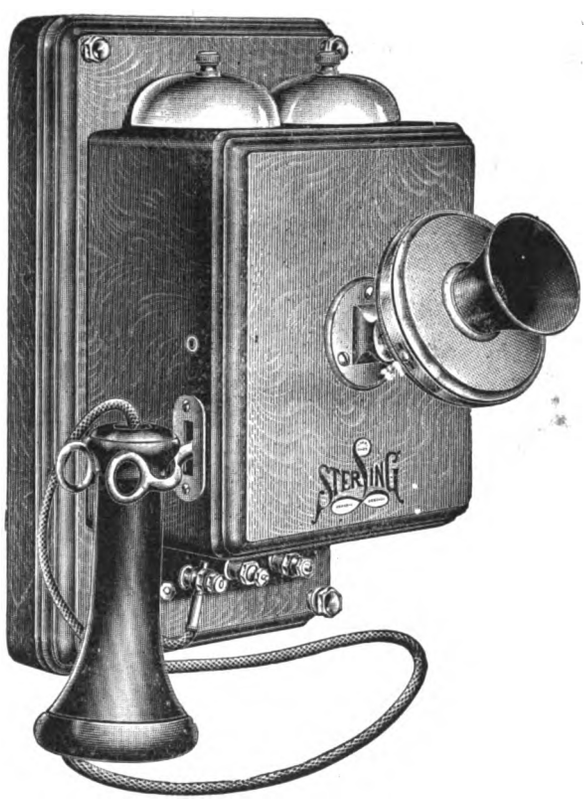
IS IT HARD ?

TO COLLECT RENTALS?

TO PLEASE SUBSCRIBERS?

TO PAY DIVIDENDS?

TO BUILD UP YOUR PLANT?



No. 20

"GOOD GOODS"

ARE YOU UP AGAINST IT? IF SO, PUT IN Sterling Phones

They will act like oil on a stormy sea

THEY DO NOT GIVE TROUBLE

Sterling Electric Co.

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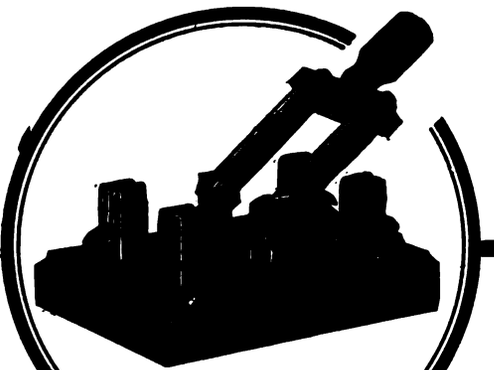

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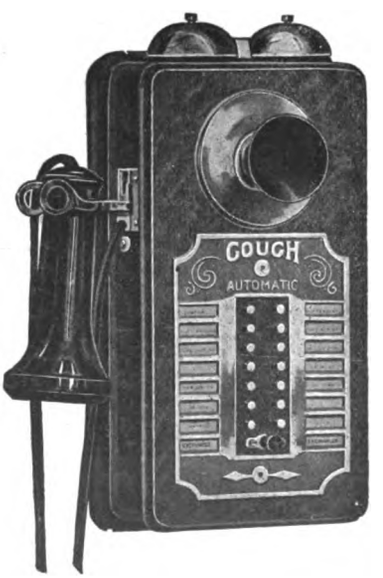

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Cleveland, O., April 10, 1907

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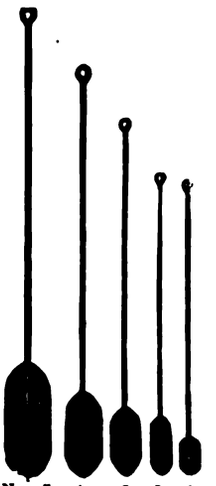

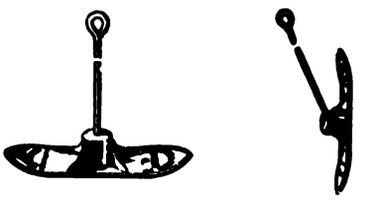

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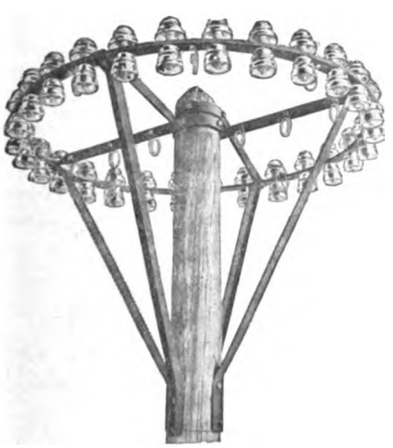

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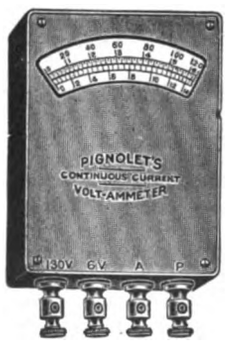

Suppose you have a line in trouble—grounded or open. You don't know the exact location, but you send out a troubleman to hunt it up and clear it. It may take him an hour or a day. Meanwhile the subscriber is getting hot under the collar and saying things about telephones in general and yours in particular.

If you have a Pignolet voltmeter or volt-ammeter you can determine the approximate location and also get an idea of the nature of the trouble. With the information your troubleman can find the fault in jig time, and you will have prevented the subscriber kicking by giving him service at the earliest possible moment.

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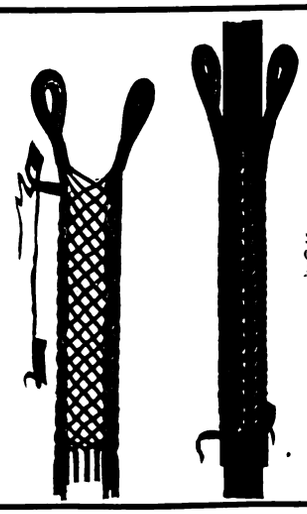

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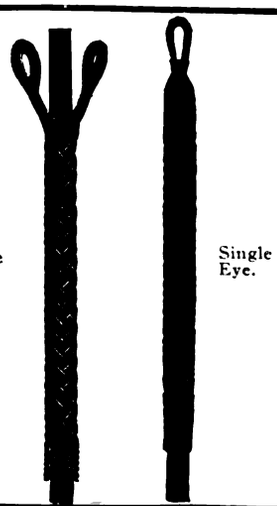

Double Eye.

Single Eye.

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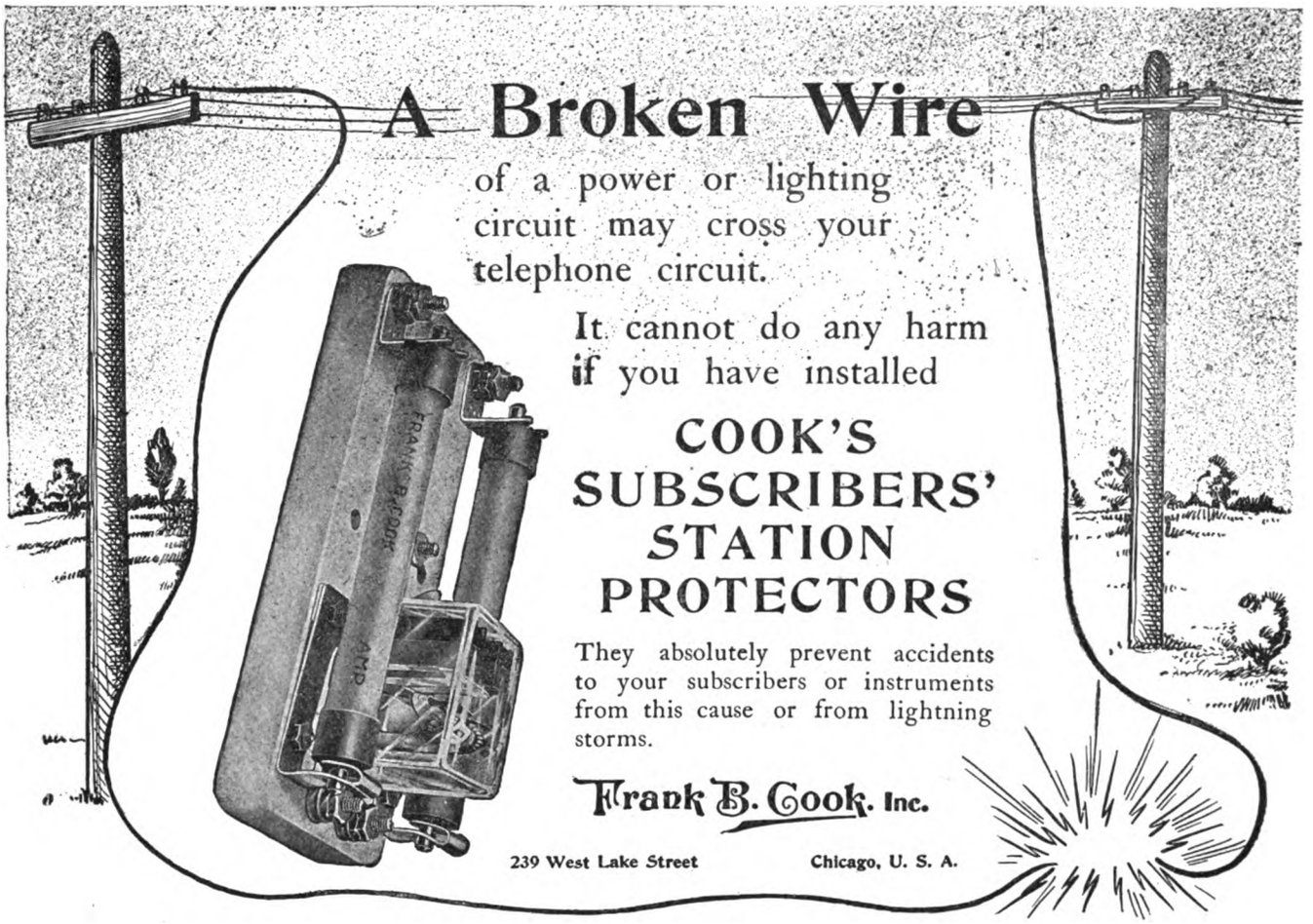

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of the success of the AUTOMATIC TELEPHONE SYSTEM lies in the elimination of the girl operators. It cannot be denied that most of the troubles and much of the expense in the manual system (where operators are used) can be charged to the operators themselves.

TRUE ENOUGH,

all operators are not faulty all the time, but some of them are at all times and all of them are sometimes. But "a chain is no stronger than its weakest link," and the average telephone subscriber judges the entire service by the poorest he has received.

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the fallible human operator has been displaced by an infallible machine, a machine that produces perfect telephone service. With the human operator disappear her faults and her expense. The former are many, the latter not inconsiderable.

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Grand Rapids, Mich.
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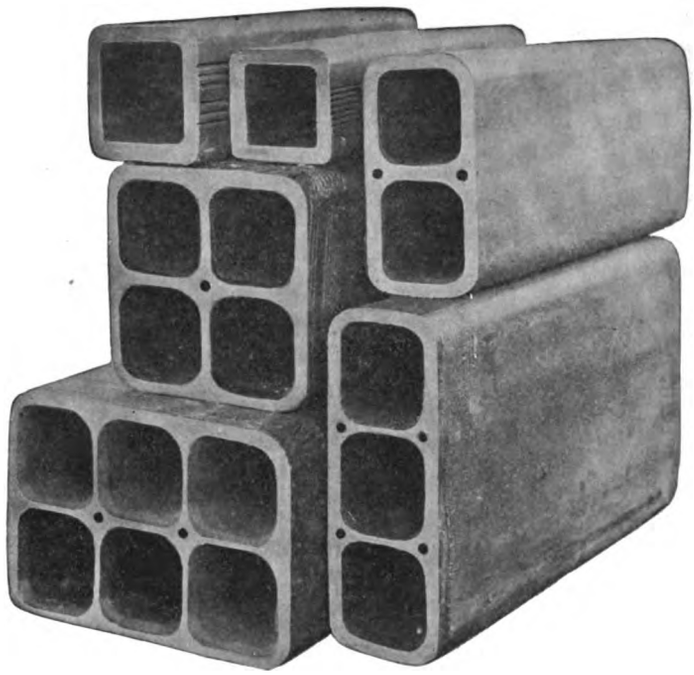

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Commercial Electrical Supply Co.

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Experience has shown that more than twenty per cent of the records of time of toll messages when timed by the operator with pencil show an error of one minute on each message and over ninety per cent of these errors in favor of the patron.

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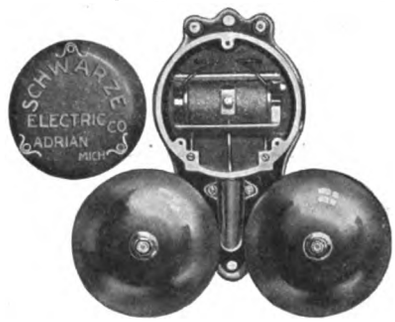

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VOLUME XV. SATURDAY MAY 11, 1907. NUMBER 19.

The Telephone Wire Plant*

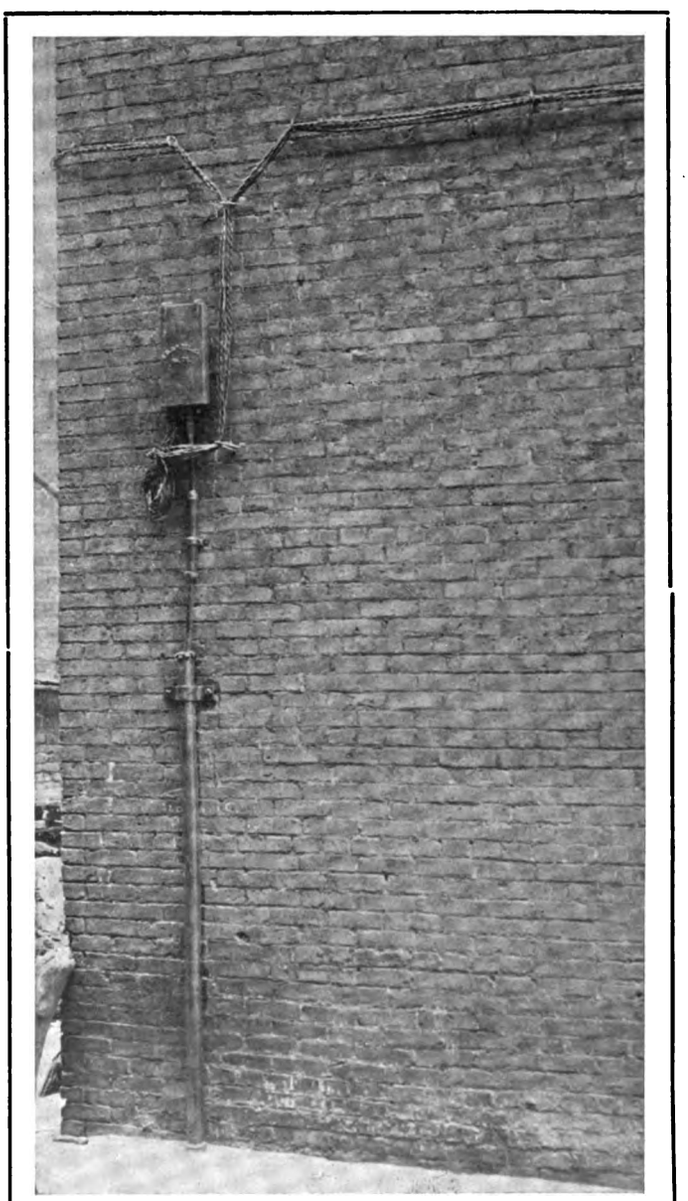
By S. P. Grace, Chief Engineer C. D. & P. Telephone Co.

An analysis of the construction costs of the telephone plant will show that from two-thirds to three-fourths of the total expenditure is required for the outside plant; that is, for conduits, poles, cables and wire. Because of the very large proportional expenditures for the outside plant, it becomes evident that the systems of line distribution should be most carefully studied in order that the best service may be given at the lowest cost.

In considering a telephone plant for a community, the first thing to be done is to decide upon a proper development plan for the growth of the business for a reasonable number of years. In view of the rapid advances in the telephone art and the possibilities of the introduction of new systems of transportation and communication, it would seem that fifteen to twenty years is as far ahead as we are justified in planning telephone development. If the plant is to care for service offered during this period, it must be originally so laid out and designed that the additional subscribers can be taken on without the redesign and reconstruction of the plant. From time to time the development plan can be revised so as always to keep it from fifteen to twenty years ahead of the plant.

In laying out a telephone development plan for a city, there are many things to be considered. The growth in population for the last ten years must be carefully considered; from all possible sources of information a prediction should be made of the population for the next ten to twenty years. It next becomes necessary to determine upon the percentage of development which may reasonably be expected; that is, the ratio of telephones in use to the population. This will vary considerably with the prosperity of the community and whether there are large manufacturing districts employing low grades of labor. It seems certain that this development in the ultimate will lie between 15 and 30 per cent of the total population. A careful estimate must also be made of the ratio of lines to stations. Thus if a very high party-line development is expected, the ratio of lines to stations will be low. To-day the telephone line really means more to us from the wire plant standpoint than the number of telephones. Formerly we used to consider the number of telephones as affecting the wire plant; now it is the number of lines. Because of the introduction of private branch exchanges two or three trunk lines may care for fifteen or twenty telephones, or there may be a number of telephones on one line, so it is the line in which we are interested.

After having looked over the city in a general way and obtained the best available data regarding the industries and the growth of the population in various parts of the city, the next thing to do is to resort to a detailed count of all the buildings, and block by block make an estimate of the number of telephones expected at the end of various periods during the next twenty years. In addition to the count of the present buildings, an estimate should be made of the probable ultimate number of the various classes of structures in each built-up block of the exchange area. In providing for the number of lines to be installed at once, which at the same time should provide for two or three 'years' growth, the present number of lines in each block should be determined and to this number about one-third more lines should be added. This will vary in different cities and must be the subject of a special study in each case.



Sub-duct Cable Terminal and Wiring Runs, in Interior Block Distribution.

*Abstract from paper presented at the 218th Meeting of the American Institute of Electrical Engineers, April 26, 1907.

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After having made a study of each block in the exchange area and determined the probable number of lines and stations at the end of each five year period during the next twenty years, the entire number of lines and stations as shown by the block map should be summed up and carefully compared with the ultimate figures deduced from the general development

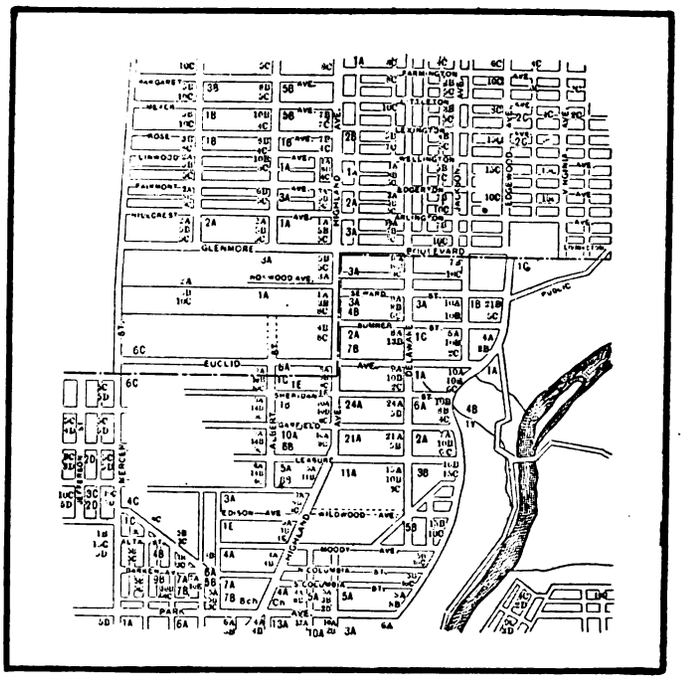

Fig. 1—Development plan. Present ultimate number and classes of houses in each block.

plan which is based upon the character of the city and the probable growth in population. If the estimates arrived at by the general development scheme and the detailed block scheme do not compare favorably, both estimates should be gone into again most carefully to determine the possible errors. In Fig. 1 is shown a section of a city of about 40,000 inhabitants. On this map are marked the numbers of the various classes of houses. At the left of the block in circles are shown present number and at right are shown ultimate number of houses. In Fig. 2 are shown the number in five years and ultimate number of lines in each block.

When the number of telephones in each block for the twenty-year study has been decided upon, it remains to determine the most economical grouping of these telephone lines into exchanges. In small cities where the number of telephone lines in the ultimate will not exceed 8,000 to 10,000, it is reasonably certain to assume that one exchange will prove the most economical. If the district is very much scattered or very much elongated this is not true, and the proper number of exchanges should be determined in a manner to be described later. If one exchange is decided upon, a location for this exchange must be determined which will make the subscribers' line wire mileage a minimum. The determination of this center with extreme precision is a problem for the calculus. The most simple case is when the streets are all rectangular, in which case the mathematical center of distribution is found by drawing lines at right angles through the exchange area, so that the number of telephones in the ultimate on each side of the lines is the same. If the present center is a considerable distance from the ultimate center, a mean center between the two should be decided upon.

When the center is determined, a complete conduit system should be laid out, touching at least one side of every block in the exchange area. It will never be necessary to construct all this conduit at once, and perhaps even in the ultimate much of it will not be installed, but if a definite plan is prepared the conduit extensions from time to time will be of correct dimensions and in the right direction. This conduit must, of course, feed to the exchange center by the most direct routes possible, and the lines should be concentrated in the smallest number of subways which will not affect the efficiency of the distributing system. Since it is known from the development plans the number of lines in each block at the present and the ultimate periods, a skeleton feeder plan of carrying these pairs back to the exchange center can readily be prepared, and from this it is easy to determine the number of ducts and sizes of manholes in the various parts of the subway. In Fig. 3 is shown a typical conduit plan. In general, the terminal cables feeding into the block should be of the ultimate size, while the feeder cables back to the exchange center should be so proportioned as to care for the growth in business for from two to five years. Fig. 4 shows a cable plan for a five-year growth. In the districts where conduit is not constructed, pole lines may be used for distribution and feeder purposes.

In the case of a large city where it is evident that a number of offices will be required to furnish the service, it is a very complex and complicated problem to determine how many exchange districts there should be. The cheapest number of districts will vary as follows:

1. With the grade of talking transmission.
2. With the subscribers' mileage—varies directly as the number of offices.
3. With the *A* and *B* position equipment—varies directly as the number of switchboards.
4. With the multiple jacks—varies inversely as the number of switchboards.
5. With the rent—varies directly as the number of offices.
6. With the office constant—varies directly as the number of offices. This office constant takes care of the equipment which is common to all offices, such as the charging dynamos, storage-batteries and power boards.
7. With the central-office labor—varies directly as the number of offices.
8. With the trunk mileage—varies directly as the number of offices; also on number of calls per line and per cent of trunking.

Good telephone service is fundamentally based upon good talking efficiency. The means for transmitting the talk is what the telephone company really furnishes to the subscriber. In

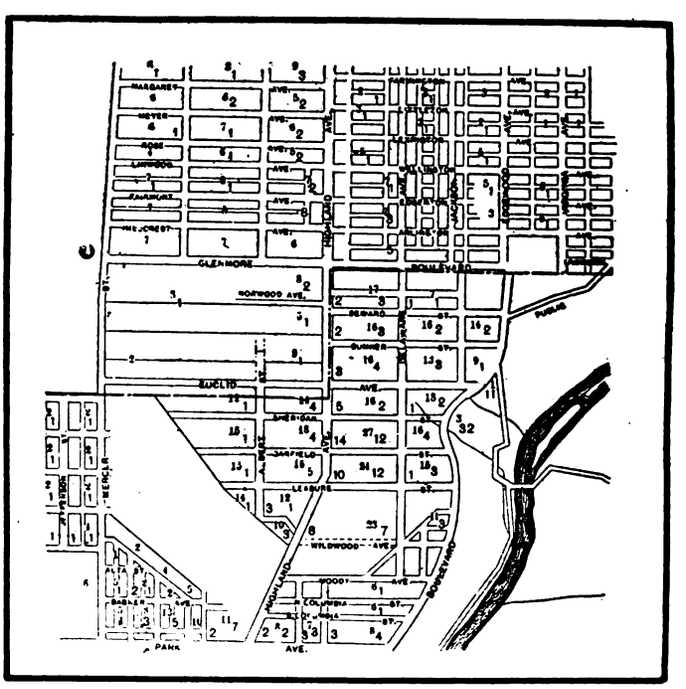

Fig. 2—Development plan. Number of lines in five years and ultimate number of lines in each block.

very large city districts, because of the distances between the central offices, the cost per message is materially increased on account of the high grade trunk plant required to give the subscribers good transmission. The central battery system of subscribers' lines has proved very efficient and economical from

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service and maintenance standpoints. There is, however, a considerable loss introduced into each line by the ohmic resistance which operates to cut down the flow of current through the transmitter. In addition, then, to the attenuation loss present

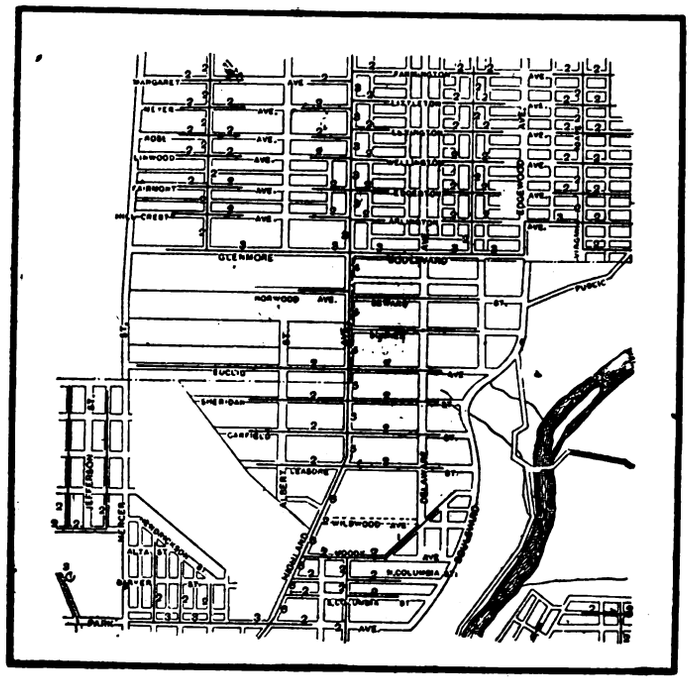

Fig. 3—Development plan. Typical underground conduit layout.

in all cases we have added to this in the transmitting loop a loss due to the reduction of the current through the transmitter.

In designing the subscribers' lines, 22-gauge cable should be used as much as possible. In the case of a large city with a number of central offices there is a limiting resistance for the subscribers' lines which cannot be exceeded without making the trunking plant very expensive. This limiting resistance of

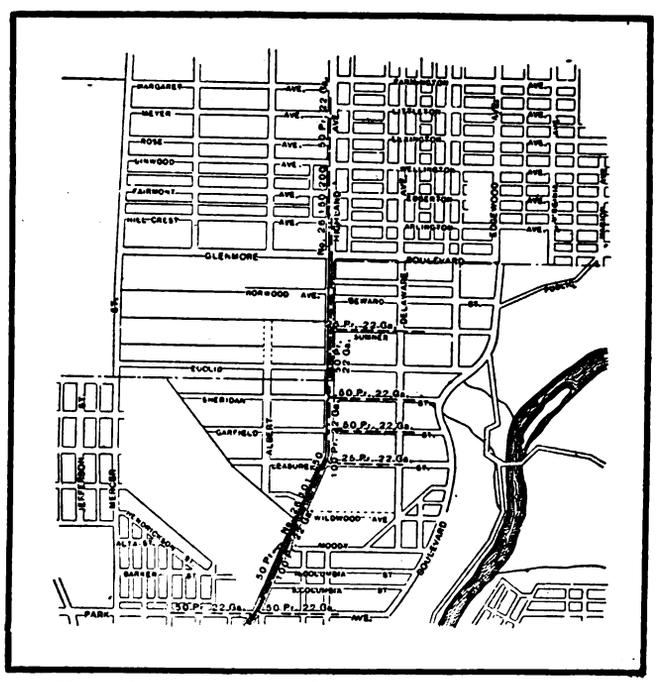

Fig. 4—Development plan. Cable plan for five years' growth.

the subscribers' line will vary in different cities because of the varying distance between central offices which affects the trunk line mileage. In general the subscribers' and trunk line plant must be so designed that, while there will always be good talking transmission between the subscribers, the annual charges on both the subscribers' and trunk line plant will be a minimum.

To lay out a city in the correct number of districts all the items above mentioned must be given careful consideration. From past experience it is generally possible to predict approximately the number of districts which will be found most economical. A number of districts above and below this value should be decided upon, and the costs and annual charges for each of these three groupings should be carefully calculated. The first cost and annual charges of all the variables given on preceding pages must be known in order to make these com-

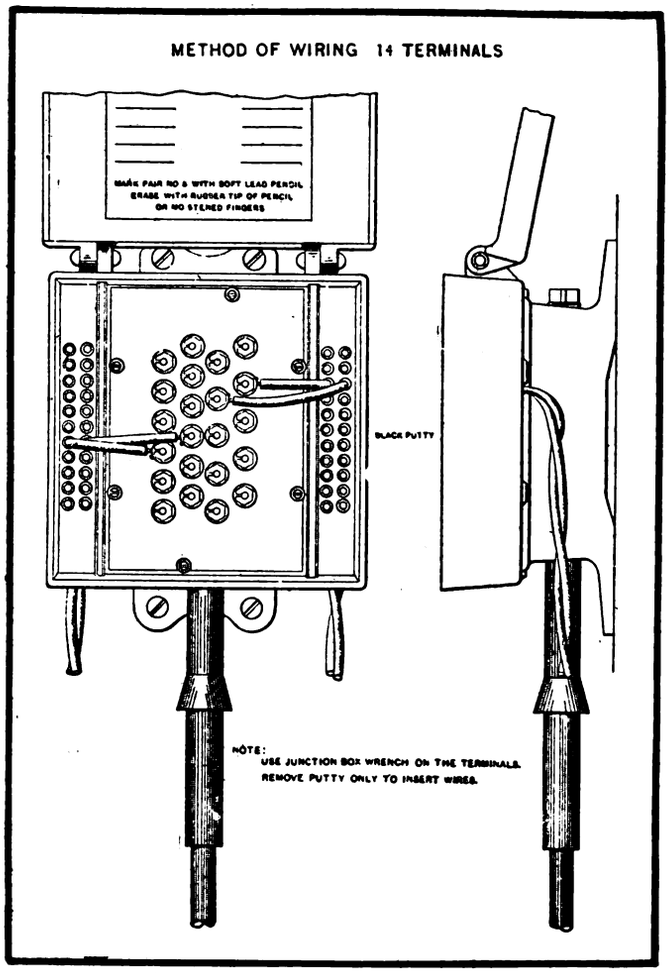

Fig. 6—Wiring diagram of cable terminal.

parisons. Our past experience indicates that the following is about the best theoretical number of districts for cities of various sizes.

	Offices.
For an ultimate of 10,000 lines or less	1
For 10,000 to 15,000 lines	2-4
For 15,000 to 25,000 lines	5-8
For 25,000 to 35,000 lines	6-10
For 35,000 to 50,000 lines	8-12
For 50,000 to 100,000 lines	10-16

After the number of offices has been decided upon, and the conduit study following the general development plan is made, it yet remains to construct the outside plant so as to efficiently and economically connect the subscribers by means of the wire plant to the central offices. Conduits should be built in the congested districts and along what may be considered as main feeder routes. In general it is economical to construct at once a conduit if 400 to 800 pairs of wires are expected within five years. In the vicinity of the underground conduit system every effort should be made to connect the subscribers without resorting to aerial construction. Where the buildings are large and permanent and an average of ten telephones per building may be expected, the best method of construction is a cable directly into each building from the nearest manhole in the main conduit system. In the case of large office buildings one or more build-

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ing cables should be run vertically in the wire or pipe shafts and terminal boxes provided at each floor, to which can be connected the individual wires for each telephone. The scheme for distributing these individual wires most to be preferred is the hall molding scheme. These hall molding troughs should connect to the terminal box on each floor so that the wires to each telephone may be run from time to time as needed. This system is cheaper to install and easier to maintain than the conduit system following electric light practice. In many cities there are large area ways under the sidewalks, and a cable run through these area ways from one building to another and provided with a tapping terminal on each property makes a very good form of distribution.

Where the blocks in the vicinity of underground conduit are well built up, but where none of the buildings are large enough or important enough to warrant direct connection, the interior block system may be used to great advantage. In this system one or more underground laterals from the main subway system are run into the interior of the block and terminated on the rear walls of the most substantial buildings. Around the interior walls at a height preferably not over ten feet from the ground are cleated lead-covered dry-core cables. At intervals of 100 to 200 feet a multiple tap is taken to terminal boxes. From these terminal boxes 18 B. & S. gauge rubber-covered and braided-bridling wire is carried through bridling rings spaced about four feet apart to the various entrances to the subscribers' premises. This distributing cable is, of course, connected to an underground cable from the main subway. In case the number of telephones within the block is small, a terminal box at the end of the underground cable may be sufficient, and nothing but bridling wires through rings used for distribution purposes. Since no protection is needed between the distributing lines and the underground cable, a very neat form of terminal box may be used. The type of box which is being largely used for this service at the present time is shown in Figs. 6 and 8 of an article which may be found in THE AMERICAN TELEPHONE JOURNAL issue of April 28, 1906. In this box the wire terminals are mounted on hard-burned porcelain. A five-foot length of dry-core lead-covered cable is connected to the terminals on the porcelain blocks, after which the blocks are firmly seated on a gasket of wicking saturated in compound. The cast iron retaining case is then filled with compound, the cable wiped to a brass nipple, and an air-tight plug inserted in the top. This hermetically seals the terminal. On account of the durable nature of the materials employed in the construction of this terminal; namely, porcelain, cast iron and brass, the depreciation and maintenance should be very low.

(To be continued.)

Flat Rates vs. Measured Service

While Preparing a Report on Telephone Conditions in Chicago, Under Instructions from the City Council, the Special Committee of Telephone Experts, Messrs. Jackson, Crumb and Wilder, Had Exceptional Opportunities for Studying the Effect of Measured and Flat Rate Systems of Charging on the Cost and Efficiency of Telephone Service. What They Have Found, and the Conclusions They Draw, Constitute a Document of Great Value and Importance. The Following is an Abstract From the Part of Their Report Dealing With This Subject.

IN order to give the best possible telephone service, the following features should be maintained at the highest possible standard by the company furnishing the service:

The telephone plant should be engineered and constructed along broad lines, and with ample facilities for handling the business and taking care of future development.

There should be provided suitable means for quickly and accurately connecting and disconnecting subscribers' lines.

There should also be provided suitable means for accurately signaling the subscriber desired without the knowledge of any other subscriber.

All lines should be free from inductive disturbances, and of sufficient carrying capacity to provide for a high standard of transmission.

The speech transmitting and receiving devices should be of the best quality, and carefully maintained.

The plant should be well constructed and maintained.

The number of cut-offs which interrupt communications should be reduced to a minimum.

The number of "busy reports" and other unavailing calls should be reduced to a minimum.

All interference with conversation between subscribers should be reduced to a minimum.

The work required of the subscribers should be reduced to a minimum.

All of the plant employed in providing service should be under the control of one corporation or organization.

The company furnishing the service should provide courteous treatment to all of its subscribers, and should promptly and fully follow up and satisfactorily adjust all complaints.

An accurate directory of subscribers' telephone numbers should be provided.

The term flat rates in telephone service ordinarily means the manner of charging for service which consists in making a fixed charge per year for furnishing the subscriber with a telephone instrument in his place of business or residence, and a suitable line or lines and means for connecting, so that he may converse with other subscribers at will. This price is a survival of the idea that a telephone company rents apparatus and telephone lines, and is based upon the theory that the cost of providing service for any subscriber to a particular class of service will be nearly equal to the average cost in that class of service. The subscriber with this arrangement is authorized to make as frequent or infrequent use of his telephone as his requirement or convenience warrants, and all subscribers of the same class are presumed to pay the same price. *The warrant for this equality in the price charged subscribers who may make use of their telephones in widely different degrees, lies only in an assumption that the expense of the service is almost altogether* a matter of providing the lines and the apparatus, and that the cost of providing each subscriber's service is practically independent of the number of times the instrument may be used for communication.

By measured rate service is ordinarily meant a service which is carried on upon the assumption that the telephone company is organized for the purpose of giving telephone service, as distinguished from the renting of instruments and lines. This, in our view, is clearly the proper duty of the telephone company, and any franchise granted to a telephone company should be drawn from this view. The provision of instruments and lines, and the other articles of equipment of the telephone company, is made purely for the purpose of enabling subscribers to transmit messages between each other with the greatest practicable convenience and dispatch. It is therefore the transmission of messages which constitutes the duty of the telephone company, and the measured rates go upon the assumption that the telephone company should be paid for the performance of this specific duty.

In connection with the measured rate service it is, of course, obvious that the company must furnish its subscribers with

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suitable telephone instruments and lines, and also provide the necessary equipment for making connections to complete the intercommunications between subscribers, and for this reason it is appropriate for a company making measured rate charges to exact a guarantee that there shall be not less than a fixed minimum number of messages or that the rate paid for service at each telephone shall not fall below a certain reasonable amount per annum. This amount will include the transmission of messages up to an appropriate number, over and above which an additional small charge may properly be made per message.

The ideal method of charging for telephone service is obviously to charge each customer in proportion to the service he receives from the company, and to make the charges of all customers as low as is consistent with the operation and maintenance of the property, and the payment of a fair return on the money invested. When flat rates are charged, two classes of customers are ordinarily differentiated, namely (a) business customers, and (b) residence customers. In each class there may be subdivisions due to the arrangement of individual customers on a single line or two, three, four or more customers on a party line, but none of these subdivisions can be made except on the basis of differences in the amount of equipment required for each customer. It is true that the differentiation between a business customer and a residence customer, which is oftentimes made, is justified on the ground that the residence

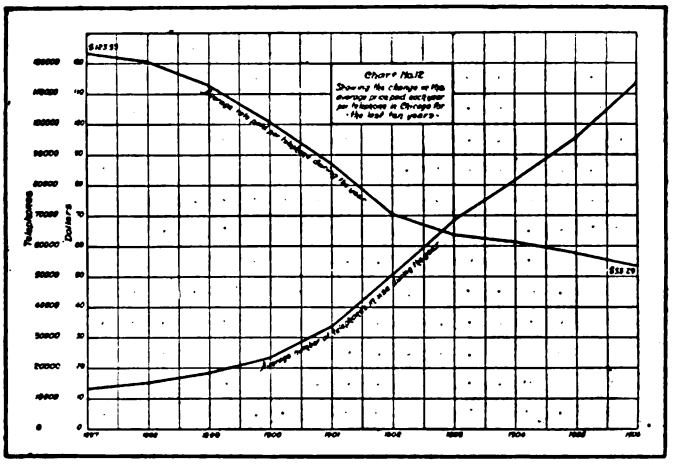

Chart No. 12.

use of telephones averages smaller than the business use, but no grading as between the different business establishments, or between one residence and another, can be made by that process when flat rates are adopted as the method of charging the subscriber. *The result of this obviously must be that, assuming that a company's total receipts are sufficient to pay for the cost of operating and maintaining its property and paying interest on the money invested, to give some of the customers on the flat rate a great deal more service than others receive, so that the smaller users manifestly pay more than their service should require, while the larger users who keep their telephones constantly busy, receive a service of much greater value and expense to the company than is justified by the annual bills which they pay.* These large consumers under the flat rates also interfere with the traffic of the smaller users by keeping their lines so busy that the smaller users are unable to conveniently get into conversation with the busy lines, thus causing unavailing calls for connections which are expensive to the company and annoying to the customers.

The greatest range of rates that it is possible to make with the flat rate arrangement is relatively small, the difference between the highest paying flat rate customer and the lowest paying flat rate customer being comparatively small, and this tends to retard telephone development and prevent its general use.

The measured rate arrangement manifestly makes it possible to reduce the price of the telephone to the small user to the smallest possible annual charge, that is, to a charge which is just sufficient to cover a reasonable interest and depreciation for the portion of the plant that must be set aside for the use of that individual user (or the average of the users in his

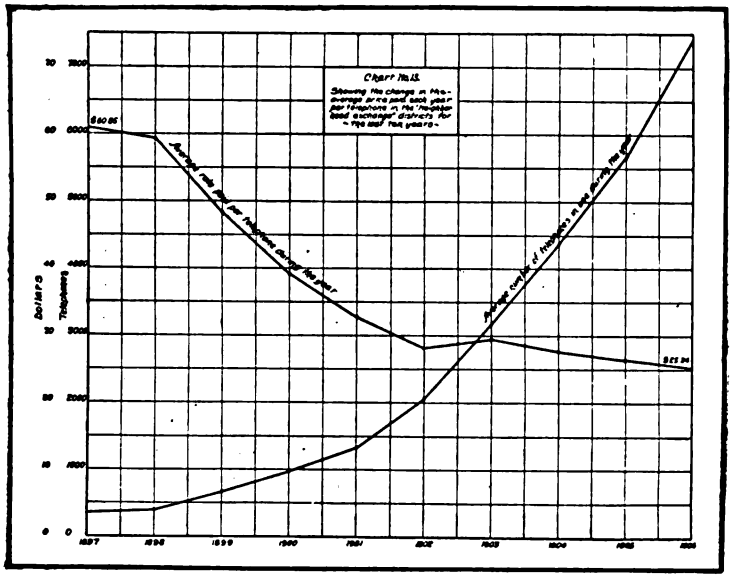

Chart No. 13.

particular class), increased by an amount which is proportioned to the actual number of messages transmitted from his telephone in the year. It is only by this arrangement that large city service may be extended to the small business men and the small residence and apartment dwellers who may be unwilling to pay more than from $18 to $24 per year, and this sort of customers constitutes a remarkably large proportion of the total telephone-using population of a large city like Chicago. When the measured rates are introduced exclusively, and carried to their logical conclusion, it may increase the cost of telephone service to the largest business users, but these users are even then charged no more than the actual service rendered to them costs the company, plus an appropriate amount to represent interest on the investment; and it is an obvious business principle that each class of service should not only be satisfactory to the users, but should also return its reasonable

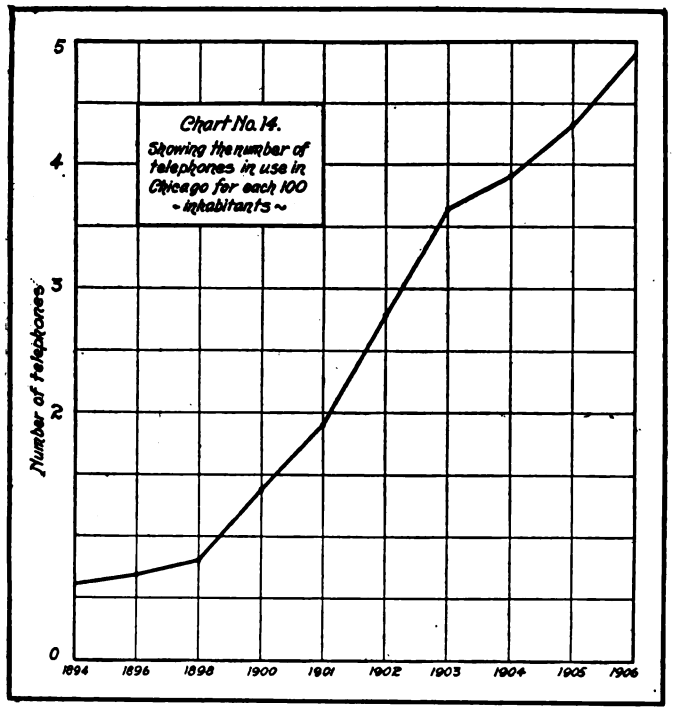

Chart No. 14.

proportion of remuneration to the company furnishing the service.

In the discussion below we have endeavored to point out by

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the use of charts some of the features pertaining to the flat rate and the measured rate, so as to show the way in which the measured rate tends toward the diffusion of telephone service, which makes it of greater advantage to the people of the city, considered as a whole, while the flat rate tends toward its contraction.

Charts showing the growth of population of the city of Chicago in the past, and the estimated future growth, have been prepared, and the indication of the curves is that the population of the city will be not far from 5,000,000 inhabitants in 1928, and that it will probably exceed 5,000,000 inhabitants by as much as a quarter of a million by the opening of 1929. It may be expected that the population at the opening of 1929 will be certainly not less than 3,750,000. At the present time (1907), the telephone development in the city of Chicago shows between five and six telephones for each 100 inhabitants. It is our opinion that this development will expand with improved and cheaper service, until there are at least ten telephones for each 100 inhabitants, and the telephone development which must be planned to occur before the opening of 1929, should be made with a view of providing the system with as many as 500,000 telephones and perhaps 600,000 telephones. Four hundred thousand telephones is too low an estimate to be reasonable, especially in consideration of the fact that a first-class and cheapened service is likely to increase the number of telephones beyond ten per 100 inhabitants, and may increase the development to a point where as many as fifteen telephones will be introduced to that number of inhabitants. Charts Nos. 12, 13 and 14 illustrate the way in which the telephone development has heretofore increased as the price of service has fallen. The consideration of the manner of charging must therefore be made with due prevision of the tremendous number of telephones that an operating company will be called on to provide within a few years. It is our belief that the number of telephones in the city of Chicago should exceed 300,000, and perhaps exceed 350,000, when the population of the city is about 3,500,000. Within twenty years, as we have pointed out, 400,000 is too small an estimate of the number that should be in use in the city of Chicago, and the number may exceed 500,000. These estimates are founded on the presumption that a franchise will be granted to a company with conditions requiring adequate service over the entire city.

The growth of the number of telephones in the city of Chicago is shown by the Chicago curve on chart No. 4 to now be going on at a rate of nearly 30,000 telephones per year, and the development has been going on at an average rate

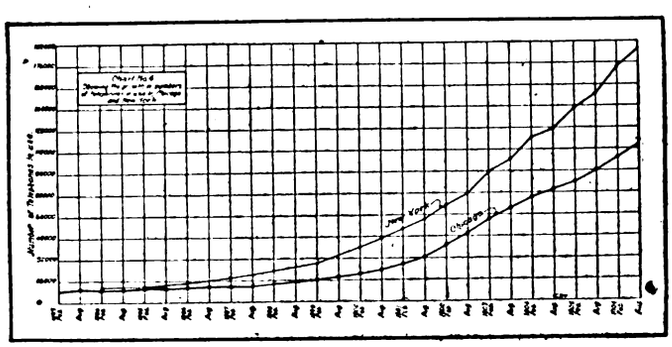

Chart No. 4.

of nearly 20,000 telephones per year for five years. During the next five years we believe that the growth in the number of telephones will go on at the highest rate yet attained and perhaps the rate will increase, provided the service can be made sufficiently inexpensive for the smaller users, and the quality of the service can be maintained or improved.

Our chart No. 5 indicates the way in which the total number of calls emanating from the telephones in the Chicago exchange district has increased steadily since 1893. For the purposes of this and following charts, a call is counted each time a subscriber takes his telephone receiver from the hook and his signal is answered by an operator. With this increase in the number of calls there has been a corresponding increase in the cost of handling the traffic, and the only way immediately open for reducing the expense is to bring about a reduction in the number of calls. As the number of telephones increases, the calls will increase at a more rapid rate unless every reasonable effort is put forth to prevent useless and frivolous calls from the telephones. *Of the total number of calls each week day, which at present average nearly a million in the Chicago Telephone exchange district, about one-third of the traffic as now*

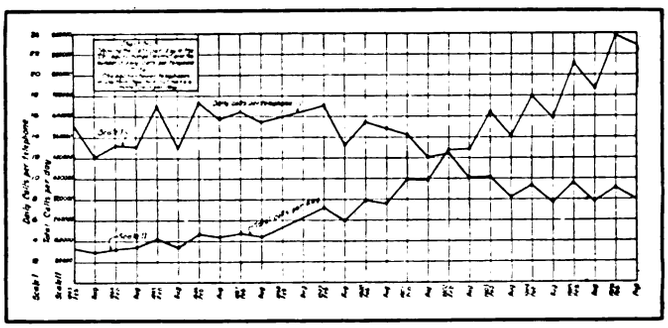

Chart No. 5.

handled constitute unavailing calls, that is, calls which are made by subscribers but prove to be futile efforts and do not mature into messages because the line called for is found to be busy or the called for subscriber fails to answer, or any of the various fertile reasons for the failure of a call to be completed into a message. Each of these calls means cost for the operations performed. To bring about good and cheap telephone service it is necessary to reduce these unavailing calls to the lowest possible number, and especially to reduce the frequency with which called for lines are found to be busy. Such "busy reports" now constitute in Chicago about one-half of the total unavailing calls and are in excessively large numbers, averaging about sixteen per cent of the total number of calls, which is in a large degree due to the tremendous use of the telephones under the flat rates now prevailing. It is obvious from our examination that the Chicago telephone service is burdened by an expensive and undesirable parasite of useless telephone calls which must be removed before the service can be made the most satisfactory and the price of the service can be reduced to a minimum.

The frivolous and useless messages can be largely cut off by making measured rates of service, since even a small charge per message becomes a marked deterrent to the needless use of the telephone. This is illustrated by the line representing the average number of daily calls made from each telephone, shown on our chart No. 5. The number of telephones has been steadily increasing in Chicago, and the total number of telephone calls per day has also been steadily increasing, but the average number of daily calls emanating from the individual telephones began to decrease in 1899 and has decreased from an average approximating sixteen calls per telephone per day to an average **approximating nine calls per telephone per day.** The time that this decrease began is concurrent with the introduction of measured rates, and during the four years while the measured rates were coming into vogue the average daily calls per telephone in the city were steadily decreasing until they have now reached an apparently fixed value that is determined to a considerable degree by the remaining flat rate telephones which involve an over use of the lines.

In these charts it will be observed that a point is marked on each of the curves for the months of February and August of each year, with the exception of the year 1898, during which no records were kept by the Chicago Telephone Company. These points were fixed by what are called "peg counts," taken on one day in August and one day in February to determine the total number of calls coming into the exchange. The counts are made by each operator keeping a record on some counting device of the aggregate number of calls coming to her position during her hours of service, and the total numbers thus given

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are plotted on our chart No. 5. The average daily calls per telephone are derived by dividing the total number of calls per day upon each of the dates of the "peg counts" by the number of telephones then in use in the city. It will be observed that the zigzag lines representing total calls per day and average daily calls per telephone rise and fall, ordinarily being higher in each February than either of the points corresponding to adjacent Augusts. This is because the telephone business in Chicago is larger in February than in August, since February is a month of great business activity and August is a month during which the business activity is reduced.

It must be borne in mind that in all these charts giving the total calls per day and the total calls per telephone, the data relate to "peg count" calls, which include all of the unavailing calls in addition to those which have become messages, and that approximately one-third of the daily calls in the city of Chicago are unavailing, one-half of the unavailing calls being caused by the over use of lines which are reported busy.

(To be continued.)

BELL SUBTERFUGE EXPOSED IN DETROIT.

THAT Bell interests attempted to take advantage of the negotiations with the U. S. Independent Telephone Company, of Rochester, to shake confidence in the Independent companies throughout the country is well known. The following is the text of a clipping from the Detroit *Free Press* of April 30:

BIG TELEPHONE MERGER APPARENTLY IS A GO.

HOME SYSTEM OF DETROIT AND MICHIGAN SAID TO BE INCLUDED.

NEW YORK, April 29.—Just as the market was closing this afternoon a widely circulated report gained much credence in electric circles and among bankers handling electric securities to the effect that a long-looked-for coup in the swallowing up of the principal independent telephone systems of the country, including the Home Telephone System of Detroit and Michigan, with its Indiana and subsidiary companies, had finally been accomplished by President Frank P. Fish, of the American Telephone & Telegraph Company, in the interest of the big Bell merger.

This report could not be verified at Fish's office by anyone in authority, Fish being out of the city. It, however, accounts for the vast issue of $40,000,000 worth of convertible four per cent. bonds sold last month simultaneously here and in Boston, London, Paris and Amsterdam, as well as the fact that the American Telephone and Telegraph stock, though jumping from 118 the day before the bond sale on March 25, was quoted at 125 Saturday, though but fifty shares were traded in during the week.

General Manager Woodbury took prompt action to set the minds of people in his city at rest, as is shown by the following from the Detroit *News* of May 1:

IN NO DANGER OF BEING GOBBLED UP.

W. B. WOODBURY LAUGHS AT STORY OF BELL OCTOPUS TAKING INDEPENDENTS.

General Manager of Home Telephone Company Shows How it is Impossible For Concern to Sell Out.

"Yes, I have seen the article in the morning paper to the effect that we were to be gobbled up by that octopus," laughed W. B. Woodbury, general manager of the Home Telephone Company of Detroit, and of the $15,000,000 Inter-State Long Distance Telephone Company. "It is a joke," continued Mr. Woodbury, "and if it was not such an old chestnut and had not bobbed up at such frequent intervals, this business of the Bell absorbing the Independent telephone companies, I might take a laugh myself, but the fact is I am getting rather blasé regarding this matter. It is a case of the Press Bureau of the Bell interests getting busy again. The statement that our company in Detroit and other companies in Michigan, together with companies in Indiana, are going to the Bell, is almost too ridiculous to warrant even a passing denial. The Home Telephone Company is controlled by a Voting Trust. This Voting Trust is for a period of ten years and was formed for the purpose of keeping control of the company away from the Bell. It would be impossible for the Home Company to go to the Bell. The same interests that control the Home Company of Detroit are in the controlling interest in the Kansas City Home Telephone Company and the Kinloch Telephone Company of St. Louis are largely interested in the United States Telephone Company of Cleveland, the Cuyahoga Telephone Company of Cleveland, and the Home Telephone Company of Toledo, and are also directly in control of the Inter-State Long Distance Telephone Company, which is a $15,000,000 corporation recently established to give long distance service in Michigan, and to build such exchanges and toll lines as may be necessary to complete the system of telephone communication in this State.

"The Inter-state Company is also controlled by a voting trust, which consists of Max Koehler, vice-president of the St. Louis, Rocky Mountain and Pacific Railroad; C. Marquard Forster, chairman of the Board of the Missouri Lincoln Trust Company, also of St. Louis; Fred T. Moran, Detroit; W. B. Woodbury, Detroit; George E. Lawson, vice-president of the People's State Bank of Detroit, with the Detroit Trust Company as registrar, transfer agent, etc., so it would be impossible to dispose of the Inter-state Long Distance Telephone Company.

"Outside of Detroit, in Michigan, the Bell interests are outnumbered by the Independent, and the local and long distance lines of the Independent are superior in Ohio and Indiana.

"The Bell Company has expended millions in a useless attempt to stifle competition and is to-day paying the freight. The Bell Long Distance has cancelled orders for millions of pounds of copper which the Independent telephone companies have bought eagerly in the present stringency in copper. So, considering all the facts, this, as I say, makes the story of the Bell interests gobbling up the Independent telephone companies around the country rather amusing, especially in view of the fact that the investment in Independent telephone property aggregates nearly $400,000,000, which is in excess of the investment by the Bell interests. In many States in the Union there is little or no field left for the Bell, and there are many cities in Ohio, Indiana and Michigan which have absolutely no Bell service, and the likelihood is there never will be.

Not only was the first clipping published at Detroit, but also in Indianapolis, Milwaukee and many other places, the name of the local Independent company being inserted in each case.

It is authentically reported that the article was inspired by the Bell Press Bureau and distributed through the Laffan service of the New York *Sun*, and not through the Associated Press.

Independent companies should not fail to see that such unjust reflections on their standing are promptly contradicted in local papers as soon as they appear.

AN OPERATORS' SCHEDULE CHART.

By R. B. FEGAN.

Many telephone managers are familiar with the advantages of having a chart posted in the operating room, which will show how long each operator must work and between what hours; but the scheme has not been put in operation in all exchanges. Thinking that perhaps the chart which is used in the exchange of the Ithaca Telephone Company, Ithaca, N. Y., may be interesting to some readers of American Telephone Journal a copy of it is reproduced herewith. By looking at it any operator can become familiar with her hours. Its use has been found to bring about good results. One particular advantage to the company is that in case an operator reports herself ill the chief operator can, by reference to the schedule, immediately pick out a substitute who can do the necessary work with the least possible inconvenience.

Opr. No.	From A.M.	To A.M.	From P.M.	To P.M.	From P.M.	To P.M.		Sat. N'g'ts.	Total Hours Worked in Day.
7.....	7:30	11:30	2:00	6:00	....	....	....	....	8
6.....	8:00	12:30	2:30	6:00	....	....	....	....	8
1.....	7:30	11:30	1:30	5:30	....	....	....	....	8
3.....	7:30	11:30	1:30	5:30	....	....	....	....	8
2.....	7:30	11:30	1:30	5:30	....	....	....	....	8
4.....	8:00	12:30	4:30	8:00	....	....	....	....	8
5.....	11:30	1:30	5:30	9:30	....	....	....	10:30	7
12.....	11:30	1:30	5:30	9:30	....	....	....	10:00	7
18.....	11:30	1:30	5:30	9:30	....	....	....	....	7
13.....	6:00	10:00	12:30	4:30	....	....	....	....	8
11.....	12:30	2:30	6:00	10:30	....	....	....	....	6½
9.....	6:00	8:00	10:00	1:30	6:00	8:30	....	9:00	8
16.....	8:30	12:00	4:00	8:00	....	....	....	8:30	8
17.....	12:00	4:00	5:30	8:30	....	....	....	....	7
8..	N'g't	....	7:30	....	....	9:30	....	....	....	8
15..	N'g't	....	7:30	....	....	9:30	....	....	....	8
14.....	8:00	11:30	1:30	6:00	Chief Operator				8
10.....	11:30	1:30	6:00	9:00	Assistant Chief Operator				6½

Operator's Schedule Chart.

NEW TELEPHONE BUILDING FOR KEOKUK, IA.

LAND for its new exchange at Keokuk, Ia., has recently been purchased by the Mississippi Valley Telephone Company in an excellent location. The plans include the latest ideas in telephone exchange construction. Arrangements have been made for the most satisfactory and economical housing of the switchboard, terminal apparatus, power plant, etc.

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THE EDITOR'S PAGE

INDEPENDENTS WARNED AGAINST DUAL TOLL LINE CONNECTIONS.

OFFICERS of the Independent Telephone Association of Indiana have been led by the urgency of the local situation, created by the offers of the Bell sub-license agents, to issue an urgent warning against taking up any proposition for dual toll line connections. It is set forth that the Bell company has never officially agreed to abandon all its exchanges in Indiana, and the Association has not approved any arrangement for dual toll connections.

Under these circumstances the signing of any agreement to take over a local Bell plant for the purpose of obtaining its toll connections would cause the Independent company to waste a great deal of money, with the sole effect of impairing its position in the field. Full information concerning this latest development of telephone affairs in Indiana will probably be available shortly after the convention next week. In the meantime leading telephone men in the Indiana Association are urgent in their request that individuals shall give no consideration to such propositions as may be made by sublicense agents. They should take up such offers as have been made in the general conference on this matter at the convention.

LINE-UP AGAINST PROPOSED NEW YORK TELEPHONE LEGISLATION IS URGENT.

SHOULD a bill introduced by Mr. Cuvillier in the New York Assembly on March 14th go into effect, telephone companies will be put under the supervision of the Railroad Commission, and in each town will be compelled to connect with other telephone companies operating competing systems.

As pointed out in a previous statement on this page, the passage of such a measure would work immeasurable damage, not merely to telephone companies, but to those who are now dependent on them for service, and to those others who under natural conditions would become so in the future. The placing of the control of the telephone companies in the Railroad Commission, under the terms of the bill as it now stands, not only involves the supervision of rates, but an implied supervision over all new extensions, thus affecting development in a manner altogether different from the physical connection provision.

At the present time the vigorous policies inaugurated by the Independent telephone companies of New York have resulted in good service for many telephone users in all but a limited section of the State. Not only this, but rates have been made low, and as a consequence of this policy, and diligence in seeking after new business, telephones have been put in many residences and business establishments which but two or three years ago could not be made to realize that the service, which they would not now give up under any circumstances, could have any value for them. Thus the value of telephone instruments to each user has been increased to an extraordinary degree.

This question of State supervision as now proposed is a broad one, and of great concern to both telephone companies and to the people at large. If the bill is passed it will hinder development by substituting red tape methods for individual initiative, and the resultant prompt action; also by making it extremely difficult to raise money to provide for extensions necessary owing to the continued demand for adequate telephone service.

Physical connection by putting lines of a well developed local company at the service of a competitor which may have some advantage in the matter of long distance lines will have the same practical effect as the confiscation of the property of the local company. This will be especially true should the division of compensation for toll messages be effected on approximately a mileage basis.

In the absence of competition there will be no incentive to keep service at the highest efficiency, and it is bound to fall off in value. The remedy which will lie in the hands of the Railroad Commission will be extremely slow in action, and not nearly as efficient as the effect of free competition. The slackened rate of growth which will undoubtedly ensue will cause existing systems to fail to reach their condition of highest value to subscribers, due to a high percentage of development, which puts many telephones at the disposal of each individual user, as may reasonably be expected to occur in a comparatively short time under present conditions. Managers and stockholders of Independent companies have the matter squarely before them, and should lose no time, not only in setting forth the condition to their senators and assemblymen, but in seeking the co-operation of influential persons who can be made to realize how the interests of telephone users will be damaged by the passage of this bill.

BREAKING IN GREEN MEN.

IT is an unfortunate fact that the average young man who starts in the construction, installing or maintenance departments of a telephone company is not only very poorly qualified as an electrician, but is likely to be equally deficient as a mechanic. The only thing which can furnish a basis for his training is his ability to quickly acquire a knowledge of things which will be useful to him, and his natural ambition and liking for the business. Without these two qualities he has no right to be working for a telephone company.

Once he gets it firmly fixed in his mind that his advancement depends in the first place on doing his work so well that it will never have to be done over, and then on making a good record for putting in his work at a low cost per job, he may begin to see his way clear to go ahead. He will learn incidentally that economy is attained not merely by working rapidly on a job, but by planning his work in advance, to cut down time expended in traveling, collecting stock, and reducing the amount of material used to the lowest point. By the time these things are well settled, the new man will have a chance to look around and see what there is in a telephone plant. He will be ready to look over the apparatus and ask questions about it. If he has shown himself to be the right sort the head of his department will make no mistake in putting information about circuits and the operation of the apparatus at his disposal as fast as he is ready to take it up. If each thing with which he comes in contact is carefully explained while he is actually working on it, and he is encouraged to ask questions about the rest, his progress will thenceforth depend on his own ability and amount of initiative. It will probably be more substantial, and a truer index to his real worth, than if any plan of forcing were adopted.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

TAX SYSTEM IN IOWA.

Will you please tell us what is the method employed by the State of Iowa for taxing telephone property, and in what respect it differs from the Kansas method? A. A. C.

THE taxing system of these two States is in principle the same. In each State the assessment is made by a State board instead of by the local assessing officials, and is based upon the supposed actual value of the property. The State board which makes the assessment is called the Executive Council in Iowa, and in Kansas is known as the Board of Appraisers and Assessors. In each State the total value is apportioned among the several counties through which the line runs, in accordance with the length of line in the county. In Iowa the actual value per mile is obtained by dividing the total value by the number of miles; then the taxable value is got by taking the percentage of actual value, and the ratio between the actual value and the assessed or taxable value is supposed to be the same as in the case of property of private individuals. The Executive Council then multiplies the taxable value per mile by the number of miles in each county and certifies the result to the county auditors. In Kansas, the value of the real estate is deducted from the total value, and the result is apportioned among the several counties through which the line runs in the ratio that the length of the line in the county bears to the length of line in the whole state.

PROVISIONS OF KENTUCKY CONSTITUTION DO NOT APPLY TO PREVIOUSLY CHARTERED COMPANIES.

Our company operating in Kentucky has had a charter for twenty years. The City Council now seeks to make us purchase a new franchise from them on the ground that we are operating without their consent. Any information concerning our rights will be gratefully received. We supposed we had a valid and binding contract with the municipality. J. W. A.

THE Kentucky Constitution (Section 163) provides that no telephone company within a city or town shall be permitted to erect its poles therein without the consent of the proper legislative boards being first obtained. But this section, by its terms, does not apply "when charters have been hitherto granted conferring such rights and work has, in good faith, been begun thereunder." Unless there are other elements in the constitution which we do not understand, your rights ought to be safe and secure.

OBJECTIONABLE FEATURES IN AGREEMENT FOR EXCHANGE TELEPHONE SERVICE.

A PROPOSED contract between two farmers' lines in the State of Pennsylvania has been called to our attention. Two clauses in this contract are all that is material to this discussion. These clauses are as follows:

The association will give service to the company over its lines, and those of connecting companies who do not charge for same, without cost or charge.

Neither party is to accept subscribers in the district of the other, or accept or give service to any company unfriendly to the other, except by mutual agreement.

This agreement is to run for a period of five years unless changed by mutual agreement.

Two objections have been raised to these clauses by one of our correspondents and they both hold good. As to the first clause, it is suggested that the company presenting the contract desires it to run for a period of five years while they, themselves, have contracts with connecting Independent lines for a period which might terminate some years before the contract quoted would expire. Under such an arrangement as this, the company having the contracts with connecting Independent companies could have free service over the entire line of the other party for a period covered by the term of the contract, but their contracts with other Independent lines might in the meantime have expired and their service be confined to merely their own exchange.

The second clause, it is suggested, looks innocent, but the section of country in which the two companies are located is practically covered by small country lines which might refuse to accept service with the company presenting the contract from which the above quotations are made. This might result in one of the parties being called upon to refuse service that to it was unsatisfactory, but to the other company was unfriendly.

The first difficulty might be obviated by making the period the contract is to run equal to the authorized period any of the connecting Independent line contracts are to last. Another possible improvement could be made by inserting a proviso in the contract that it should become void in case one of the parties severed connections with any of its connecting Independent lines. The second objection, it would seem, would be difficult to remedy unless all of the small country lines in the section would come to a preliminary agreement.

LAND OWNERS' RIGHTS WHEN WIRES CROSS BUT NO POLES ARE SET ON HIS PROPERTY.

A RESIDENT of Buffalo, N. Y., sued the Frontier Telephone Company in ejectment, complaining that the company stretched a wire over his premises, but without placing any poles thereon. The wire was removed by the company after the suit was brought. The court found that the question was a new one, but held that the plaintiff, being the owner of the land, "even to Heaven," was entitled to recover. This case decides that there is no limitation to a person's ownership of land within the bounds of any structure yet erected by man. The removal of the wire after the suit was brought was held not to interfere with the action. Butler vs. Frontier Tel. Co. (N. Y.), 79 N. E., 716.

DEPOSIT REQUIRED FOR UNDERGROUND WIRES.

AN ordinance of Louisville, Ky., requires the Home Telephone Company to deposit five dollars to cover damages for every 75 feet of street turned up in conduit construction, and also to give a blanket bond of $15,000. To obtain a construction of this ordinance a suit was arranged between the company and the city in which a decision has been reached partially favorable to each side. The contention of the company was that the requirement was an impairment of the contract contained in the company's charter, as the city received $10,000 for the franchise and a bond of $10,000 to protect it against damage. The court held that the deposit required for each 75 feet of wire put under ground was legal and covered by a clause of the contract permitting modifications.

The extra bond of $15,000 was held to be a duplication of the former bond of $10,000 and was invalidated by the decision of the court.

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QUERIES

DIMENSIONS OF GAS ENGINE BELT.—(857.)

We run our charging machine with a gas engine, and in ordering the engine a mistake was made in the size of the flywheel which, being larger than was expected, causes the generator to run at a greater speed than that for which it was intended. We therefore are going to change the pulley on the generator which is four and a half inches for an eight-inch one. As we will be obliged to order a new belt also we would be pleased to have you advise us as to the correct length of the belt to order so that we may have no trouble in setting it up when it arrives. H. R. R.

As you have not given us the diameter of your gas engine flywheel or the distance the machines are apart we are unable to advise you of the exact length of belt to order; however, this you may readily ascertain by the following rule as given by Kent who is an authority on matters of this nature.

To find the length of belt required for two given pulleys, add the diameter of the two pulleys together, divide the sum by 2, and multiply the quotient by 3¼ and add the product to twice the distance between the centers of the shafts.

Thus you will add 8, which is the diameter of the new pulley, to the diameter in inches of the flywheel of your engine, dividing the sum by 2, then multiply by 3¼ to which you add twice the distance, in inches, in a straight line from the center of the pulley shaft on the generator to the exact center of the flywheel. This will give you the length of belt necessary, in inches.

HOWLER CIRCUIT USING ELECTRIC LIGHT CURRENT.—(858.)

We have tried a number of Howler circuits as shown from time to time in the various telephone publications but have not seen one which just suits us. Will you not suggest one that will give positive results at all times without costing too much, or being likely to get in trouble frequently? Is there not some manner in which A. C. electric light current might be utilized for this purpose?

W. O. Y., *Michigan.*

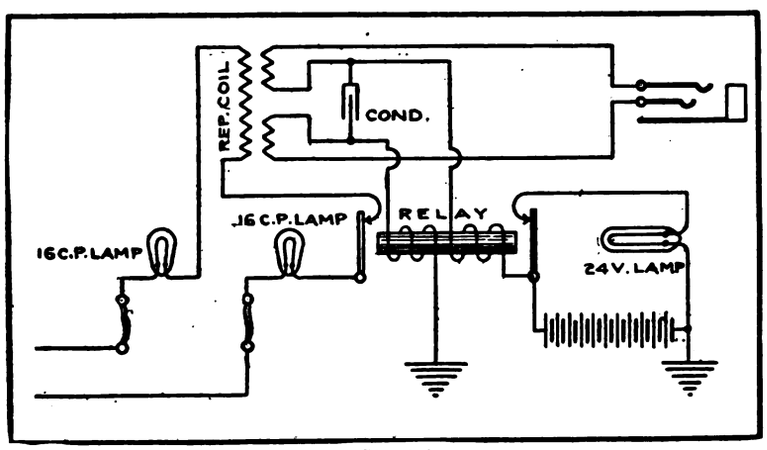

Fig. 858.

One method by which electric light current of an alternating nature may be used as a howler is shown in Figure 858, and may be put in shape with very little trouble or expense, using material which may ordinarily be found in any common battery exchange. The necessaries are two sixteen candle-power, 110 volt lamps, one repeating coil, one 4 M.F. condenser, one double wound relay, one switchboard lamp and one switchboard jack.

In the majority of common battery switchboard circuits the battery is supplied to the line by means of the cord circuits when the plugs are in the line jacks, therefore it will be necessary to note which side of your plug carries the positive side of your battery and arrange the connections of your relay accordingly. The method of operation is then very simple. The subscriber leaving his receiver off the hook causes the battery on the line to flow through the primary side of the induction coil and transmitter to the office and hence through his line relay which causes an actuation of the relay and causes his line signal to show.

The operator upon placing a plug in the line jack cuts out this line relay in the customary manner thus restoring the signal to the unoperative position; then upon ascertaining that the subscriber has left the receiver from the hook, she takes the other plug of the pair and inserts it into the howler jack. The battery current on the line then completes its circuit through the howler relay, thus energizing it and actuating the two armatures, one of which closes the circuit of the alternating current through the repeating coil and the other completes the circuit in which is included the howler supervisory lamp. Owing to the practical short circuit existing at the subscriber's instrument which allows the passage of the battery current the howler relay will remain energized so long as the receiver is off the hook and the alternating current will cause a "howl" in the subscriber's receiver.

Immediately the subscriber restores his receiver to its proper place the circuit will be broken, the relay will become de-energized, and the armatures will return to their normal positions, thus opening the alternating current circuit and also that in which the supervisory lamp is included. Thus the operator is immediately advised of the restoring of the receiver and then removes the cords from the jacks.

The sixteen candle power lamps in series with the repeating coil are simply resistances to cut down the current.

POLARITY OF STORAGE BATTERY PLATES.—(859.)

Will you kindly tell me how to determine the polarity of the plates of a storage battery?

The best indication of polarity is the color of the plates. The positive plate is a light brown when discharged and of a chocolate color when charged, while the negative varies from a dark to a light slate color. A very simple test and one that is certain is to dip wires attached to the terminals of the battery into dilute sulphuric acid, the one from which the most bubbles rise being negative.

EFFECT OF RESISTANCE OF BELLS ON RURAL LINES.—(860.)

On a rural line do bells of a high resistance have a tendency to increase the talking efficiency of a line? A. F.

On a heavily loaded rural line a greater talking efficiency would be secured if bells of a high resistance are used. This is not due to any helping effect of the bells on the line, but simply owing to the greater resistance encountered by the current passing through the bells. That is, a bell of a high resistance will not absorb as much of the talking current as would one of lower resistance.

The object in using the high resistance bell on a line is not only to facilitate the talking qualities of the line but also to enable the bells to ring more readily. This is possible with bells of a high resistance owing to the fact that there are more turns on the coils and therefore as great a current is not necessary to cause an actuation of the armatures of the bells. On rural lines having a large number of instruments attached it is customary to use ringers having a resistance of 1,600 ohms; however, if the lines are very heavily loaded, bells having a resistance of 2,000 ohms will give more satisfactory service.

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THE DEADLY PARALLEL

AUTOMATICS VS. LEVERS

With GRAY PAY STATIONS you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

GRAY TEL. PAY STATION CO.

HARTFORD, CONN.

OUR '07 CATALOGUE SENT ON REQUEST

FOR SALE

For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

FOR SALE.—We offer for sale the following assortment of Stromberg-Carlson Central Energy telephones displaced by our installation of Automatic equipment:

250 Type E central energy desk telephones with stationary head, corrugated nickel-plated pedestal, black enamel metal base, bipolar receiver, gold electrode transmitter.

1,000 No. 204 desk telephones with adjustable transmitter, knuckle joint arm, nickel-plated pedestal and base, same transmitter and receiver as above.

100 Type C. E., latest style desk telephone with No. 4 transmitter, all rubber bipolar receiver, black rubber pedestal, nickel-plated base, induction coils at end of cord instead of in base. A modern instrument.

1,000 Former type ZZ, later known as No. 37, business style central energy wall telephones complete with triplet set consisting of combined switch-hook, transmitter with adjustable arm, bipolar receiver, etc. This instrument is provided with shelf.

100 Former type Z, later known as No. 35, residence style, central energy wall telephone without shelf, otherwise same as No. 37.

These instruments are in good condition and will be sold at a reasonable figure. Prices will be furnished upon application to W. F. LAUBACH, Manager, Akron People's Telephone Co., Akron, Ohio. 822

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WANTED.—Competent man as superintendent, also first class switchboard repair man. Good salary for first class man. None other need apply. Address, Box 821, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 821.

WANTED---Continued

WANTED.—The management of an electric light plant where the business can be built up. Have had experience and can "deliver the goods" on any electric lighting proposition. Open for engagement after July 1, 1907. Address Box 816, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 816

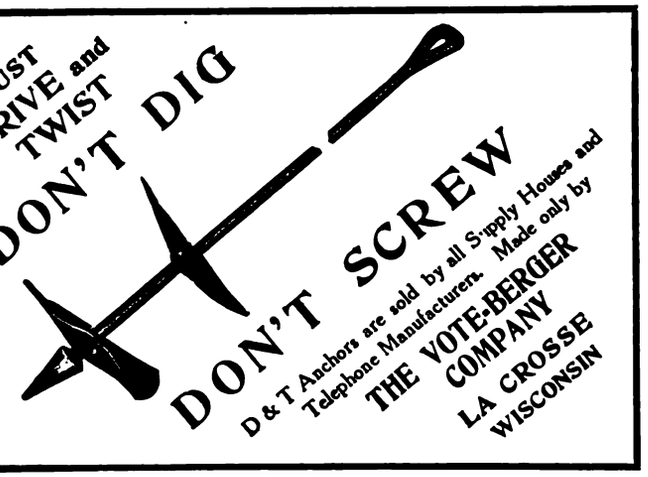
POSITION WANTED—A first class man wants to make change. Would like position as Manager or Wire Chief. Twelve years' experience. A-1 reference. Address, Box 825, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 825

WANTED—To operate small country switchboard not over 100 line, with living rooms on the premises. 12 years' experience. Address Box 823, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 823

WANTED—Position by good troubleman experienced in line, office, and instrument trouble. In other respects am willing to render myself generally useful. Satisfactory testimonials. Address Box 828, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 828

SITUATION wanted by experienced man as wire chief or switchboard repair man and troubleman for common battery plant. Address Box 830, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 830

POSITION WANTED—An experienced and capable telephone man desires employment as exchange manager, or any responsible plant or maintenance position. Can furnish excellent references. Address Box 831, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 831



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Write To-day for Samples and Prices. Toll Bills. Rental Bills.

Form G-90.	For Small or Branch Exchange use; carries account for 2 years.
Form G-90-A.	For Large and Medium City Exchanges and Systems of Exchanges; the most complete form made.
Form G-90-B.	For City Exchanges having many Rural Lines.
Form G-90-C.	For City Exchanges, Rentals and Toll Charges separated.
Form G-90-E.	For Small Exchanges, Rentals only.
Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
Form G-90-H.	One subscriber to a sheet; carries account 12 years.
Form G-90-I.	For Small Exchanges; Bound Books; carry 12 subscribers on a page for 1 year.

THE Edwards-Hine Co.

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IN THE OPERATING FIELD

LATE OPPOSITION TO GRANTING OF INDEPENDENT FRANCHISE AT JACKSON, MISS.

MISSISSIPPI has recently been the scene of some very lively and interesting discussions of telephone matters. The State Railroad Commission has been criticising the Cumberland (Bell) company on account of its alleged poor service, and the idea of Independent service has made rapid gains in the public estimation. At Meridian and Hattiesburg there are two flourishing Independent exchanges, the first having over fourteen hundred subscribers, while the latter has seven hundred. The Independent company at Hattiesburg has only been in operation since the first of this year, while the one at Meridian has been in operation little more than one year. The same interests which control these exchanges have recently secured a franchise at Jackson, the State capital, and have applied for a franchise at Vicksburg. The company, after building local systems in these cities, intends to build long distance lines connecting them together, and also to connect with other important long distance lines and exchanges which are now being built up throughout the South.

At Jackson the situation at the time the franchise was granted was especially interesting. A correspondent thoroughly familiar with the situation writes that "the franchise here was granted so quietly and with so little local opposition that the Bell company apparently did not know what was going on, and only woke up when the ordinance had been passed. A campaign was immediately instituted by the Bell interests to have the franchise repealed, and it promised to do about anything that the city wanted done, including the installation of free city service, putting wires underground, giving 3 per cent. of the gross earnings to the city, etc. Previous to this it is reported that the company had refused to give the city a single free telephone, and had notified the governing officials that it intended to raise its rates to all subscribers."

"After the franchise had been granted a convention of all Mississippi managers of the Bell company was held in Jackson, evidently more to create public sentiment than for any other reason, as most of the talking was done by the higher officials, telling how they loved the dear public, how they wanted to please them, etc. The city council had another meeting on the 11th inst., at which it voted unanimously to let the franchise stand as granted, showing that all efforts of the Cumberland company were unavailing."

COLORADO TELEPHONE COMPANY ENDEAVORS TO STRENGTHEN ITS POSITION BY ISSUING STOCK TO DENVER SUBSCRIBERS.

A NEW departure for a Bell company, and one of special significance, is that inaugurated by the Colorado Telephone Company, as set forth in a circular recently issued by President E. B. Field to Denver subscribers. It seems that on March 12 a certain amount of the treasury stock was offered to the stockholders, and six thousand shares of the par value of fifty dollars each were not taken at the time the subscription was closed. The company apparently was awake to its opportunity to do a good stroke of business in two directions at the same time, and it is now offering these six thousand shares to the subscribers at par.

The circular frankly states that the object in offering this stock is to secure the co-operative influence of the greatest number of its telephone subscribers, as the company thoroughly realizes the value of such influence. It would appear that this Bell company is learning a lesson from one of the principal sources of strength of the Independent companies, and is preparing to fortify its position as much as possible in view of the impending competition in Denver.

INDEPENDENT COMPANY AT NASHVILLE REORGANIZED UNDER NEW LAW, MEETS WITH SPITEFUL OPPOSITION.

AFTER gaining every point it desired, both in the Supreme Court of that State and in the Legislature in the form of new laws, the Home Telegraph Company, which has been trying to enter Nashville, Tenn., for several years, has reorganized the company and changed the name to the Home Telephone Company. The Board of Directors then elected the following officers: R. E. Cooper, president; W. C. Polk, vice president; H. M. Perry, treasurer; Charles Curry, secretary. The capital stock of the company was placed at $1,000,000, most of which was subscribed to by the builders of the through trunk lines from Louisville to New Orleans via Nashville and Birmingham. The conduit ordinance of the city requires the company to place its wires underground, but this offer was voluntarily made by the company when its proposition for a franchise was made to the city council and no objections will be offered. The new company has arranged to begin work on its plant and proposes to have its system in working order within a year.

Although the State law grants the new company every right in any city and the State Supreme Court has decided in the company's favor the Cumberland Company is still carrying on the fight with a determination that is marvelous. The city campaign is about to open and already several candidates have announced that they are opposed to the new company and will place every obstacle in its way. It is proposed now to put up the plea that many of the streets are too narrow for the operations of the company and an effort will be made to exclude it from many parts of the city. The new State law gives the city the right to govern the methods of constructing a telephone system. Being ready to begin its work the Home company filed a request with the mayor for specifications so the work could begin at once. The mayor replied that his term of office would soon expire and he did not care to take part in any further telephone controversies. The Board of Public Works was applied to and there the attorney for the company was referred to the legal department. At the office of the city attorney the company got no satisfaction. Already the telephone matter has been an issue in two city campaigns and will likely be an issue in the coming campaign. Nashville being the home of the Cumberland branch of the Bell company, it is dying a hard death and will not give up the fight as long as it can place a single obstacle in the way of the Independents.

ANNOUNCED RAISE OF RATES CAUSES LOSS OF BELL SUBSCRIBERS AT SHREVEPORT, LA.

SHREVEPORT, LA., is up in arms against the Cumberland Telephone Company on account of a threatened advance in telephone rates. The Cumberland company has announced an advance on resident telephones from $2 to $2.50 and a similar advance on business telephones. The Progressive League took the matter up and petitioned the company to let the rates remain, showing that the company was receiving a good return on its investment. The Cumberland company replied that it would advance the rates on June 1. Thereupon the organization passed a resolution to patronize the Independent company. During the last few days of April the Cumberland company lost over fifty of its residence subscribers and it looks as if it will lose the major portion of them.

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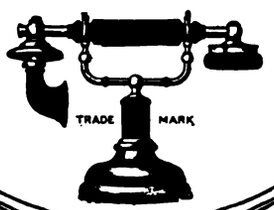
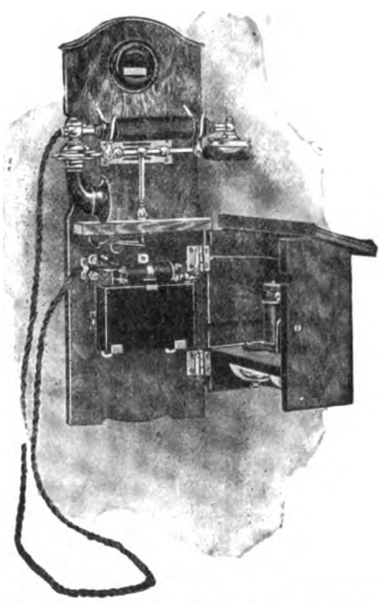
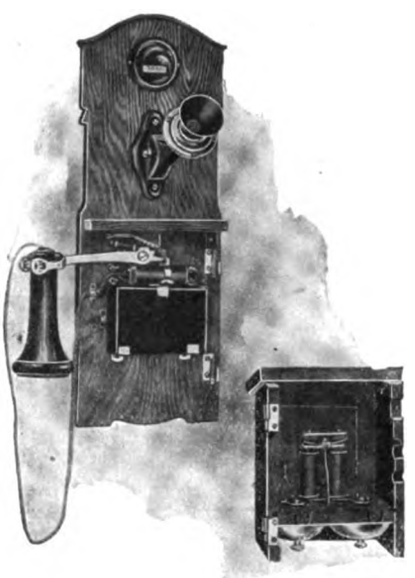


ERICSSON

Common Battery Wall Sets



With Cradle Switch and Handmicro Telephone.



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Two attractive and beautiful designs. Built for efficiency and hard service. Perfect in construction, material and workmanship. Unexcelled in finish. Unequalled in efficiency.

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TELEPHONE PATENTS

WEATHER-PROOF TELEPHONE.

George F. Atwood, East Orange, New Jersey, patents (No. 847,305; dated March 19, 1907; filed March 12, 1906; serial No. 305,551) and assigns to Western Electric Company, Chicago, Ill., a telephone set.

The inventor's intention is to construct a weather-proof telephone particularly adapted to use on ships, where the instrument may be exposed to inclement weather and the wear occasioned by the uncertain movements of the boat. The set consists of a hand microphone enclosed in an air-tight, water-proof metal cabinet together with the hook of the switch upon which it hangs, the induction coil, ringer movement and other parts. All of the parts aside from the hand microphone are contained within an inner chamber, in order that they may at no time be exposed to the weather even though the door of the case be open.

TELEPHONE REPEATER.

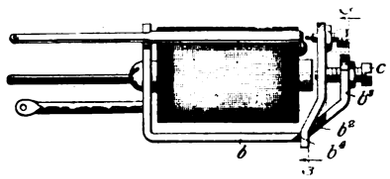
Ferdinand Emile De Faucheux D'Humy, Englewood, New Jersey, patents (No. 847,777, dated March 19, 1907; filed June 26, 1906; serial No. 323,482) a telephonic repeating circuit and apparatus.

This patent describes a form of telephone repeater in which the long distance line is cut at its center of balance, each section entering one side of separate repeating coils. One end of the other side of each of these repeating coils is grounded; the other terminal of the grounded side is connected in series through a microphone relay, thence through one side of another repeating coil and to ground. The second windings of this last repeating coil are in series with battery and the armatures of the microphone relay are connected in series with a microphone relay, and with the primary of a second repeating coil legged to ground. The second windings of these last repeating coils are in series with a resistance, an inductive solenoid and another resistance, forming a closed loop, taps being taken at the center of the non-inductive resistance and attached to terminals of condensers, the other terminals of which connect to ground. The windings of the microphone relays are split and a tap from the center goes through one winding of still another repeating coil having a secondary connected in series with battery and the microphonic contacts of the relay associated with the other side of the line, and thence to ground.

RELAY.

Charles E. Scribner, Jericho, Vt., patents (No. 850,402, dated April 16, 1907; filed March 31, 1906; serial No. 309,060) and assigns to the Western Electric Co., Chicago, Ill., a relay.

This invention relates to a relay having the pole piece *b* formed



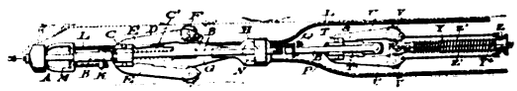
to act as a base for the armature and having the vertical extension b^3, upon which is mounted the armature adjusting screw *C*.

The pole piece *b* and the armature, which has a tongue-and-groove seat on the pole piece, are each provided with knife-edge bearings, which rest one against the other, the object being to reduce to the minimum friction between the moving parts.

CONDUIT THREADER.

Thomas J. Cope, Philadelphia, Pa., patents (No. 850,625, dated April 16, 1907; filed June 11, 1906; serial No. 321,117) an apparatus for threading or laying electric conductors in conduits or pipes.

This invention comprises an arrangement of two wedges, *D* and



S, with rollers *F* and *V*, together with pulleys and ropes so arranged as to allow by proper manipulation of the ropes of first one set of rollers engaging the sides of the conduit solidly, allowing the other roller-bearing portion of the apparatus to move in a forward direction, when it in turn engages the conduit walls, allowing the same motion in the first set. Thus the rollers of the head and tail pieces frictionally engage with the conduit alternately, allowing an alternate forward motion of the pieces, thereby carrying the entire apparatus through the conduit with an attached conductor or leading-in rope of the cable.

TELEPHONE RECEIVER.

Howell W. Haff, of New York, N. Y., patents (No. 843,891; dated Feb. 12, 1907; filed Aug. 27, 1906; serial No. 332,094) and assigns to Kelley M. Turner, New York, N. Y., a telephone receiver.

This patent covers a telephone receiver of the watchcase type equipped with a jack for the reception of a plug attached to the conducting cord. and a switch mounted in the receiver in such a manner as to allow of the circuit being opened readily.

The inventor states that this receiver is designed primarily for use in connection with apparatus for deaf persons.

WIRE CONNECTORS FOR ACCOUSTICONS.

Howell W. Haff, Babylon, N. Y. patents (No. 843,890; dated February 12, 1907; filed March 17, 1906; serial No. 306,584) and assigns to Kelley M. Turner, New York, N. Y., a connection for accousticons.

This patent covers a form of wire connections for use in accousticons in which it may be desired to connect several receivers in multiple.

INSULATED STAPLE.

Walter T. H. Taylor, Brockton, Mass.; William J. Jenks, New York, N. Y., and Richard N. Dyer, East Orange, N. J., patent (No. 843,916; dated February 12, 1907; filed November 20, 1906; serial No. 344,200) and assign to Insulating Staple Co., New York, N. Y., a corporation of New York, an insulating saddle staple.

This invention relates to an improvement upon the insulating saddle-staple covered by patent No. 420,635, granted to Luther Stieringer, February 4, 1890. Threatened lengthwise upon the staple is a strip of thin insulating material, covering both the inner and outer legs of the staple near the head with a single thickness and giving a double thickness under the head of the staple. In making this combination a thin strip of insulating material is doubled, the upper layer only being pierced by the points of the staple.

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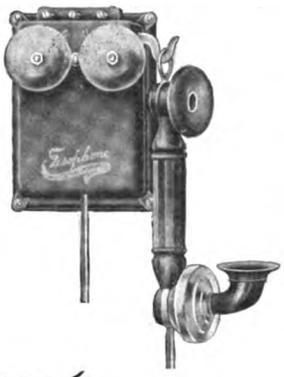
The Subscriber sees that they are Convenient, Efficient and Attractive.



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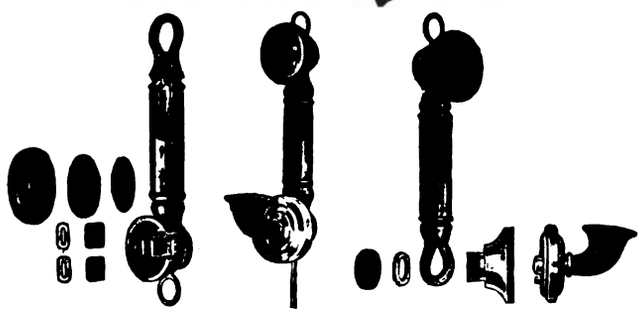

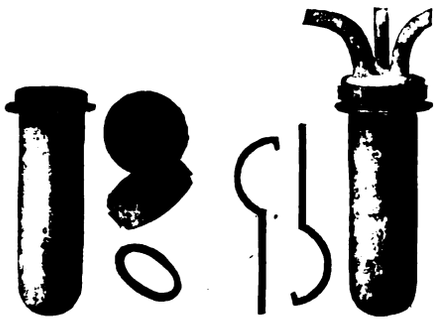

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IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

NEW WESTON MEASURING INSTRUMENT.

AN instrument which possesses an exceptionally wide range of usefulness in measuring electrical quantities is the new Weston multimeter. The company states that this instrument will quite accurately serve the purpose of a direct current voltmeter, milli-voltmeter, ammeter, mil-ammeter, ohmeter, ground detector and Wheatstone bridge.

The indicating instrument is similar in mechanical and electrical construction to the well-known Weston portable direct current instruments, and is nearly equal in accuracy to any of the separate Weston portable direct current instruments, for which it may be substituted, including the voltmeter, milli-voltmeter, ammeter, mil-ammeter. The only difference from the regular form of these instruments which is noted in the multimeter is that it has a special movable coil, which adapts it to better meet the requirements of the combination of which the indicating instrument forms a part. Combined with the indicating instrument, which has detachable shunts, are a Weston type Wheatstone bridge and a battery of twelve silver chloride cells.

The scale of the instrument has one hundred and sixty divisions, with zero placed at ten divisions from the end, so that when used as a galvanometer in connection with a bridge, both positive and negative deflections may be observed. In the Wheatstone bridge many novel features of construction are embodied. The twelve cells of battery are arranged in a separate compartment. Any cell may be used alone, or several in series if desired. The Weston Electrical Instrument Co., Waverly Park, Newark, N. J., will be pleased to send any further information desired upon receipt of a request.

Weston Multimeter.

THE NATIONAL POLE COMPANY, of Escanaba, Mich., is a corporation which has been recently organized under the laws of the State of Michigan, to take over the business which was formerly handled by the Cedar Department of the Pittsburg and Lake Superior Iron Company, of Escanaba. The officers of the new company are J. C. Kirkpatrick, president and general manager; H. W. Reade, vice president and treasurer, and E. A. Hubbard, secretary. The stockholders in the new corporation are identical with those of the Pittsburg and Lake Superior Iron Company.

The necessity for this new organization arose from the extremely rapid development of the business connected with the marketing of the poles and other forest products taken from the lands owned by the Pittsburg and Lake Superior Iron Company. While the policy and principles which have brought the latter company into such favorable consideration with buyers of telephone poles will be observed in the future, the facilities for the transaction of this class of business will be materially increased and improved. New yards will be established on the Pacific coast, with headquarters at Everett, Wash., and stocks of poles will also be carried in the Eastern States. At the present time large yards have been established at various advantageous points in Michigan, Wisconsin and Minnesota, and with these facilities the new corporation states that it will be able to furnish high grade supplies to its patrons with exceptional promptness.

ALBERT J. COX & COMPANY, 1022-1023 Chicago Stock Exchange Building, Chicago, Ill., have recently been appointed western sales agents of Legler, Grimes & Eilerman, manufacturers of finished or die moulded castings. The name of these castings was assigned them because they are finished when cast, thus eliminating subsequent expensive machine work. The company claims that it is able to duplicate a model so accurately that the variation in any measurement will not exceed one-thousandth of an inch.

In making these castings it uses a standard metal, developed after long experiments, which can be plated in brass, bronze or other styles. Messrs. A. J. Cox & Company invite manufacturers using castings which now require machine work to submit samples, drawing or models, with a statement as to the number used in a year, and desired on each separate order, in order that they may demonstrate their ability to effect economies in this line of goods by giving quotations.

W. N. MATTHEWS & BRO., 219 North Second street, St. Louis, Mo., has just issued a booklet, printed in two colors, which is extremely attractive in appearance, and gives much valuable information. The idea which the company had in mind was to put before buyers of telephone supplies a neat and attractive net price list, which would give in a convenient form information concerning the money-saving specialties which it handles.

The illustrations and printed matter are so arranged that very complete information is given, making it unnecessary to carry on an extended and tiresome correspondence before placing orders. For convenience in reference the front cover is cut off slightly shorter than the first page, and each of the succeeding pages increased in length about one quarter of an inch, thus making it possible to print at the foot of each page an index line, facilitating ready reference. Among the well-known specialties listed in the book are Stombaugh guy anchors, Kearney cable clamps, Lima jack boxes and plugs, Hargis cable splicing, joints, etc.

The company is sending out large numbers of these books and would like to receive requests for copies at the earliest possible date, in order that they may be mailed to those especially interested before the edition is exhausted.

THE GRAEBER-ENTRIKIN MANUFACTURING COMPANY has recently been incorporated for the purpose of manufacturing a new type of telephone pay stations, and various other classes of measured service and telephone equipment. The executive officers of this corporation, which has its headquarters in Philadelphia, are Frederick R. Graeber, president and treasurer; Clarence T. Entrikin, vice president and engineer, and Geo. W. Garman, secretary and general manager. Mr. Graeber is a well-known Philadelphia business man and Mr. Entrikin is an engineer and inventor with a good reputation in engineering circles. Mr. Garman is a thoroughly practical telephone man, has had a wide experience and is thoroughly familiar with the requirements of telephone companies. The company has offices in the Keith's Theatre Building, 1116 Chestnut street, Philadelphia.

THE TRUMBULL ELECTRIC MFG. COMPANY, Plainville, Conn., is putting out a small monthly magazine, which contains some interesting and amusing matter. The last two or three pages are devoted to practical information about the Trumbull switches

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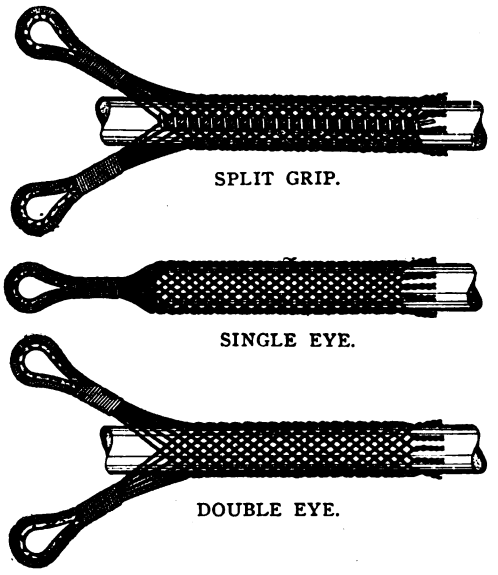

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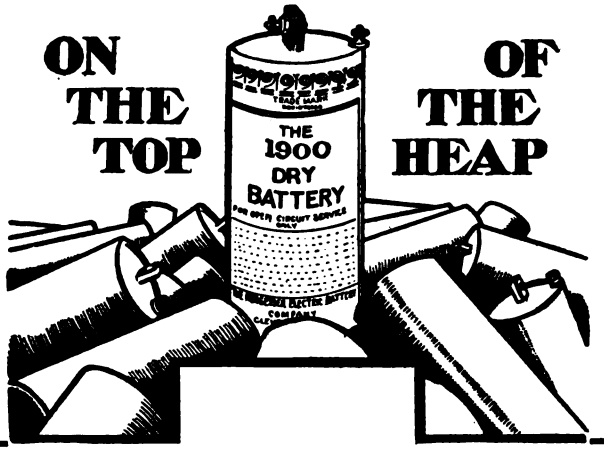
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THE WEEK'S MESSAGES

NEW COMPANIES.

LOS ANGELES, CAL.—The Southern Telephone Electric Company, whose intention it is to operate in Texas and other Southern States, has been organized. Among those interested are: E. L. Swaine, manager of the Home Telephone Company; J. N. O. Rech, secretary; J. F. Norris, cashier of the Occidental Trust & Savings Bank, treasurer, and R. J. McHugh, engineer.

ALEDO, ILL.—Articles of incorporation have been filed by the People's Telephone Company of Aledo. It has an authorized capital stock of $3,500, and the incorporators are Peter F. Mauck, David N. Blazer and A. G. Reinolds.

LONE TREE, IA.—The East Freemont Telephone Company has been organized with a capital stock of $5,000, the life of the company being fifty years. Its principal place of business is to be at Lone Tree, and the following officers have been elected: J. W. Carey, president; W. J. Kirkpatrick, secretary; F. H. Lentz, treasurer. The directors are: J. W. Carey, W. J. Kirkpatrick, J. R. Guthrie, Athanas Jegie, Edward Mumm.

KIRWIN, KAS.—An Independent telephone company, to be known as the Deer Creek Mutual Telephone Company, has been organized at this city. Its intention is to construct and maintain lines between Kirwin and Dana.

PLANO, KY.—Articles of incorporation have been filed by the Plano Telephone Company. It has an authorized capital stock of $420 and the incorporators are: M. C. Potter, J. D. Wright, of Plano, and W. H. Jenkins and J. F. Hagerman, of Bowling Green.

BREAUX BRIDGE, LA.—The Breaux Bridge-St. Martin Telephone Company has been organized. The new company contemplates the erection of a telephone system in this city, and expects also to build lines to neighboring towns. Work on the plant has already been commenced.

BARRYTON, MICH.—The Barryton Rural Telephone Company has been organized with a capital stock of $10,000 to construct a telephone system in Barryton. Construction of the system will be commenced very soon and connections effected with the Union Telephone Company's lines for State business. The following officers have been named: Henry Walrath, president; Charles Gaumer, vice-president; Dan Wait, secretary and treasurer, and Arthur Denno, manager.

SPRUCE, MO.—The Farmers' Telephone Company has been organized to build lines from Butler to Spruce.

WEST LEYDEN, N. Y.—The farmers between West Leyden and Ava have organized a telephone company to be known as the North Ava Telephone Company and have elected Fred P. Grubel, president, and F. E. Wolfe, secretary and treasurer.

LIDGERWOOD, N. D.—The Lidgerwood Rural Telephone Company has filed articles of incorporation. The capital stock is placed at $25,000, and the incorporators are Louis J. Christensen, John J. Mathews and M. C. Christensen, all of Lidgerwood.

WAYNOKA, OKLA.—Articles of incorporation have been filed by the Lone Star Telephone Company. It has a capital stock of $300, and A. E. and M. A. McGolden are among the incorporators.

BEAVERLAKE, PA.—The Sullivan and Money Creek Telephone Company has been incorporated with a capital stock of $10,000.

WICHITA FALLS, TEX.—Articles of incorporation have been filed by the Wichita Falls and Northwestern Telephone Company, of Wichita Falls. The capital stock is placed at $10,000 and among the incorporators are R. E. and C. C. Huff and William McGregor.

DOTHAN, W. VA.—An Independent telephone company, to be known as the Beckley & Fayetteville Telephone Company, has been incorporated to construct and operate a telephone system at Dothan. It has a capital stock of $5,000, of which $50 has been paid in, and the incorporators are Frank Thompson, E. N. Case, Harrison Toney, J. W. Mahoney and J. W. Coleman.

CARTER, WIS.—The Carter-Wabeno Telephone Company, of Carter, has been incorporated with a capital stock of $4,000. Among the incorporators are N. W. Johnson, A. J. Johnson, E. Hemenway and W. S. Slater.

LANNON, WIS.—Among the newly organized companies is the Menomonee Falls Telephone Company. It has planned to install a local system in this city, and to establish connections with Lisbon and Huberter.

LADNER, B. C., CAN.—The farmers of the Delta municipality have organized a mutual telephone company. The principal place of business is to be at this city and lines are to be built in all directions and into the surrounding country. H. M. Basey, of Delta, is at the head of the new company.

WALKERTON, ONT., CAN.—The Bruce Telephone Company has been formed at this city. It is expected that lines will be built in Teeswater, Culross, Brant, Walkerton and other places.

FRANCHISES.

NERSTRAND, MINN.—The Northfield Telephone Company of Northfield has been granted a franchise to construct and operate a telephone system in Nerstrand.

MASSENA, N. Y.—The Home Telephone Company of Malone is endeavoring to secure a franchise at Massena.

MIDDLETOWN, O.—Application has been made to the Middletown council by W. S. Harlan and others for a franchise to build and operate an Independent telephone system in Middletown. It is the intention of Mr. Harlan and his associates to form a new company and form connections with the Hamilton Home Telephone Company and other Independent lines.

HOLLIDAYSBURG, PA.—The right of way to build a line from Hollidaysburg to Williamsburg has been secured by the United Telephone Company.

RENOVO, PA.—The Union Telephone Company has been granted a franchise to establish a telephone system in this city.

HOUSTON, TEXAS.—After considerable opposition on the part of the Bell company, Messrs. Fred. Reed and John Slusher have secured an Independent telephone franchise in Houston.

PINCHER CREEK, ALB., CAN.—The council of Pincher Creek has granted J. E. Woods a ten-year franchise, stipulating that the town is to have the privilege of buying the telephone plant at the expiration of the time or of extending the franchise for another ten years.

FINANCIAL.

SIOUX CITY, IA.—The New State Telephone Company, Sioux City, Ia., on April 1 paid the semi-annual interest on its bonds, and on May 1 paid semi-annual dividends upon its preferred stock at the rate of 7 per cent.

SALISBURY, MD.—At the annual meeting of the Cecil Farmers' Telephone Company a 5 per cent. dividend was declared. The affairs of the company are in a flourishing condition, and it is its intention to extend its operations.

ALLEGAN, MICH.—A 2 per cent. quarterly dividend has been paid by the Citizens' Telephone Company.

LINCOLN, NEB.—The Lincoln Telephone Company has increased its capital stock from $100,000 to $200,000.

BEREA, OHIO.—The capital stock of the Citizens' Telephone Company, of Berea, has been increased from $50,000 to $65,000.

DELAWARE, O.—The capital stock of Delaware County Telephone Company has been increased from $10,000 to $20,000.

MIDDLETOWN SPRINGS, VT.—A 6 per cent. dividend has been declared by the Rutland County Telephone & Telegraph Company.

COMBINATIONS.

DUSHORE, PA.—A merger has been effected between the Wyoming and Sullivan County Telephone Company and the Commonwealth Company of Wyoming Valley. The lines owned by the Wyoming and Sullivan Company extend from Lopez to Dushore, thence through Colley to Wyoming county.

NEW WILMINGTON, PA.—Robert J. Totten, of New Wilmington, has acquired the entire capital stock of the New Wilmington Telephone Company, the purchase price being $4,000. Mr. Totten is secretary of the Plaingrove Independent Telephone Company, and it is quite likely a consolidation will soon be effected between the two systems.

NEWS—WANTED

THE matter contained upon the message and Operating Field pages of this paper is contributed largely by our special correspondents. We believe, however, that there are many valuable items of telephonic interest which are never brought to the attention of the public. There is no reason why this condition should exist, and the Editor, therefore, invites all telephone companies and the officials of such companies, to furnish any information that they can consistently make public relative to financial statistics, new construction, elections, franchises and personal items.

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THE WEEK'S MESSAGES

DAYTON, VA.—The Rockingham Mutual Telephone Company has acquired the plant of the Dayton & Bridgewater Telephone Company.

ELECTIONS.

BELVIDERE, ILL.—The following directors have been elected by the Belvidere Telephone Company: J. R. Balliet, W. M. Marean, F. S. Rowan, Geo. Grummon, M. C. Marean.

SALISBURY, MD.—The Cecil Farmers' Telephone Company has elected the following officers: E. A. Gillespie, president; E. T. Dorcus, treasurer; C. E. Ewing, secretary. Directors—Joseph T. Grove, Elwood Balderston, C. E. Ewing, E. A. Gillespie and J. I. France.

CONSTANCE, MINN.—The Mutual Telephone Company has elected the following officers: President, William Nelson; secretary, J. A. Peterson; treasurer, P. J. Johnson; general manager, John Simonson. The directors are John Simonson, Charles Heglund, Gust Soderburg.

STET, MO.—The following directors have been elected by the Stet-Rockingham & Norborne Telephone Company: J. H. Shirky, Isaac Paul, W. T. Gardner, J. C. Bales, A. Hilton, T. D. White, Philip Shultz, John Rhoades and Otto Keltner.

BOUND BROOK, N. J.—The following officers have been elected by the Somerset County Telephone Company: President, Spencer Weart; vice president, M. M. Hoose; secretary and treasurer, W. W. Smalley.

SALUDA, S. C.—The officers of the newly organized Saluda Telephone Company are W. L. Daniel, president, and T. L. Edwards, secretary and treasurer.

MILWAUKEE, WIS.—The following officers and directors have been elected by the Milwaukee Independent Telephone Company: President, H. D. Critchfield; vice-president, E. A. Wadhams; vice-president, J. S. Van Nortwick; secretary, C. J. Chapin; treasurer, Howard Greene. Directors—John M. Baer, W. W. Cargill, C. J. Chapin, H. D. Critchfield, Howard Greene, J. C. Harper, B. G. Hubbell, George P. Mayer, Wilmer Sieg, Richard Valentine, J. S. Van Nortwick, E. A. Wadhams, Richard Wagner and J. B. Whitnall.

PERSONAL.

P. J. FROST, formerly connected with the Massillon Telephone Company, Massillon, O., has recently been appointed superintendent of construction of the Cass County Home Telephone Company, Dowagiac, Mich.

CLAUDE O. WILHELM, well known to Independent telephone men in Northern Indiana, has accepted a position as chief engineer of the Cass County Home Telephone Company, of Dowagiac, Mich.

MISCELLANEOUS.

FREMONT, IOWA.—The plant of the Farmers' and Traders' Telephone Company, of Fremont, has been purchased by G. S. Terrell from its former owner, W. E. Jenison. The purchase price was $5,000, and the system includes fifty miles of lines and four switchboards, one at Fremont, Cedar, Wright and White Oak.

PULLMAN, MICH.—The Pullman, Mich., Telephone Company, formerly owned by John Pollard, of Elkhart, and M. A. Olds, has become the property of the farmers of Pullman. A mutual company is being organized by them, and the stock is being rapidly sold. The purchase price was $3,000, and among those largely interested in the enterprise are Harvey Cook, John Stevens and Charles Lyons.

OREGON CITY, ORE.—The Clear Creek Mutual Telephone Company has acquired the Bonney line through Parkplace.

New Construction in the Field

TOMBSTONE, ARIZ.—It is the intention of the Tombstone Telephone Company to build lines to Pearce and Gleason, and work has already been commenced.

LESLIE, ARK.—A line between Leslie and Marshall is being constructed by the Farmers' Telephone Company.

CLAREMONT, CAL.—A new exchange is being installed at this city by the Home Telephone Company.

IMPERIAL, CAL.—Many improvements in its system are contemplated by the Imperial Telephone Company, among which is the installation of an exchange at El Centro.

CAPRON, ILL.—The lines of the Capron Home Telephone Company are being extended.

HARTFORD CITY, IND.—Among the improvements planned by the United Telephone Company are the repairing of its lines in Hartford City, and the building of a number of farmers' lines.

GRAND MOUND, IA.—New lines are to be erected by the Farmers' Telephone Company.

LE MARS, IA.—Considerable construction work is being done by the Plymouth County Telephone Company to take care of its increasing business.

RINGSTED, IA.—It is the intention of the Farmers' Mutual Telephone Company to construct three new lines, one northeast and one southeast of the town, and one to Hoprig.

SIOUX CITY, IA.—The New State Telephone Company, Sioux City, Ia., which operates Independent long distance lines centering in Sioux City, and has its own direct circuits to South Omaha, Council Bluffs, Sioux Falls and other intervening points, announces through its secretary, C. H. Smith, that during the year 1907 it expects to spend in the neighborhood of $250,000 in extensions.

PRESQUE ISLE, ME.—The Independent Telephone Company, in which a number of prominent men in Houlton are interested, expects soon to commence the installation of its plant at Presque Isle.

COMFREY, MINN.—A number of new lines are to be erected by the Comfrey Rural Telephone Company, one of which will run through Mulligan Township.

NELSON, MINN.—Among the extensions planned by the Nelson Telephone Company are lines to Osakis, Carlos and Hudson. In all about sixty miles of metallic lines are to be built this summer.

STET, MO.—It is the intention of the Stet-Rockingham Norborne Telephone Company to build a new exchange building in Prairie Township and consolidate the switchboards at Stet, Rockingham and Norborne under one management.

ORD, NEB.—A new switchboard has been installed by the Farmers' Mutual Telephone Company, and many other improvements in its system are planned.

PAPILLION, NEB.—A telephone system is being installed by the Farmers' Mutual Telephone Company in this city.

ELMIRA, N. Y.—Many improvements in its system are being made by the Overland Telephone Company in this city.

LYONS, N. Y.—The Wayne County Telephone Company is considering the advisability of enlarging its plant.

PENN, N. D.—The Penn Rural Telephone Company, recently organized, has commenced the construction of its system.

PORTSMOUTH, O.—A new switchboard is to be installed by the Portsmouth Telephone Company at its branch exchange at Wheelersburg.

WARREN, O.—It is the intention of the Warren and Niles Telephone Company to expend $4,500 in the improvement of its system.

COLDWATER, OKLA.—The lines of the Rural Telephone Company are to be extended from Coldwater to Nashville.

BENTON, PA.—New lines are to be erected by the Benton Rural Telephone Company to Red Rock, Derrs, Emmons, Fritz Hill and Jamison City. The company already operates in Benton township, Jackson township, Sugarloaf township, Fishing Creek township, Stillwater and Millville boroughs, and Greenwood and Fairmount townships.

FAIRMONT, W. VA.—The Consolidated Telephone Company contemplates the expenditure of $20,000 on its Fairmont plant and about $10,000 on its Grafton plant. Long distance service is now complete to Pittsburgh, and a short line to Wheeling is to be opened shortly.

UNDERGROUND.

KEOKUK, IA.—The Mississippi Valley Telephone Company is at work on its underground system.

MANCHESTER, IA.—It is the intention of the Delaware County Telephone Company to place its wires in conduits in the business portion of Manchester.

SIOUX CITY, IA.—The Sioux City Telephone Company is planning to lay $15,000 worth of new cable.

JACKSON, MISS.—The Independent Telephone Company, which is to establish a system in Jackson, expects to place its wires in conduits in the business portion of the city.

HORNELLSVILLE, N. Y.—The Hornellsville Telephone Company expects to soon commence its conduit work in this city.

MT. VERNON, O.—The Mt. Vernon Telephone Company is placing its cables in conduits.

TROY, OHIO.—The Home Telephone Company contemplates placing its wires in conduits in Troy.

OREGON CITY, ORE.—The Home Telephone Company has commenced the work of placing its wires underground in this city.

WAYNESBURG, PA.—It is the intention of the Greene County Telephone Company to place some of its wires underground in Waynesburg.

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Manufacturers
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OUR NEW STOCK COMING IN 100,000 TO 150,000 BY APRIL 1st
26 YEARS HAVE WE BEEN PRODUCING POLES. WRITE US
Yards { Omer, Bay City and Boyne Falls
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POLES
20 and 25 foot lengths for rural telephone lines a specialty.
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Buy from the Producers and Save Jobbers' Profits.
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CARRIAGE AND MACHINE BOLTS
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EDISON
TELEPHONE LAMPS
869

General Offices 42 B'way, N. Y.
GENERAL STORAGE BATTERY CO. BIJUR HIGH DUTY NEW YORK
Works Boonton, N. J.

1907 Lease Records 1907
FOR NEXT YEAR GET THE BEST
That's Our "New Form"
Many companies are now using it, and all are pleased. Ask for circular describing it. Order early and avoid the rush.
WE ALSO FURNISH

Toll Tickets.	Trouble Tickets.
Toll Journals.	Rental & Toll Bills.
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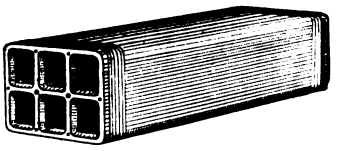
Directories.	Steel Telephone Signs.

All kinds of blanks, books and forms for Telephone and Toll Line Accounting. Write for sample forms and prices.
TELEPHONE PRINTING COMPANY
Defiance, Ohio

"MORE FAILURES in advertising are made because too little space is used than because too much is used when the right magazine has been selected. Too many beginners in advertising want to use space in everything and so do not begin because they cannot buy as much space as they ought to have in everything, and they do not realize that to use adequate space in the best publication of its kind will give them the most complete knowledge of their advertising possibilities on the least cost without duplication and will make SUCCESSFUL ADVERTISERS OF THEM BY ITS USE ALONE."


WE KNOW HOW
to make conduits, because we have had thirty-five years' experience and employ the most approved methods. The buyer of our conduits can depend upon their being as good as can be made—every one of them. All thoroughly vitrified by our own process.
ASK US ABOUT IT
ROCHESTER SEWER PIPE COMPANY
550 Oak Street ROCHESTER, N. Y.

CONDUIT BITUMINIZED FIBER
FOR UNDERGROUND WORK
AMERICAN CONDUIT CO.
Write for our Engineering Data Bulletins.
140 Nassau St., New York.
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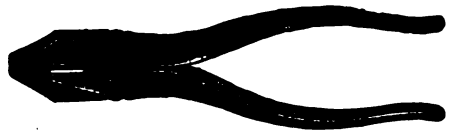
For the protection of our customers we advise that Klein's Pliers are being imitated to LOOK LIKE KLEIN'S. This, however, does not make them Klein's.
CAUTION. Look for this stamp, M. KLEIN & SONS, on the inside of handles—NONE are genuine without this stamp.
Use only genuine Klein's. They are the product of years of experience and have stood the test of time.
MATHIAS KLEIN & SONS · CHICAGO, ILL.

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STANDARD PORTABLE DIRECT READING
VOLTMETERS, AMMETERS, MILLIVOLTMETERS, VOLTAMMETERS, MILAMMETERS, OHMMETERS, PORTABLE GALVANOMETERS, GROUND DETECTORS AND CIRCUIT TESTERS.
Our Portable Instruments are recognized as THE STANDARD the world over. Our STATION VOLTMETERS AND AMMETERS are unsurpassed in point of extreme accuracy and lowest consumption of energy.
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Berlin—European Weston Electrical Inst. Co., Ritterstrasse, No. 88.
New York Office—74 Cortlandt Street.

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ALL THAT THE NAME IMPLIES
Made of best malleable iron. Will take any size cable; others are limited—never break, slip, split, or wear out. Stand any kind of weather. Write us for further particulars and prices. Get the Security Book.
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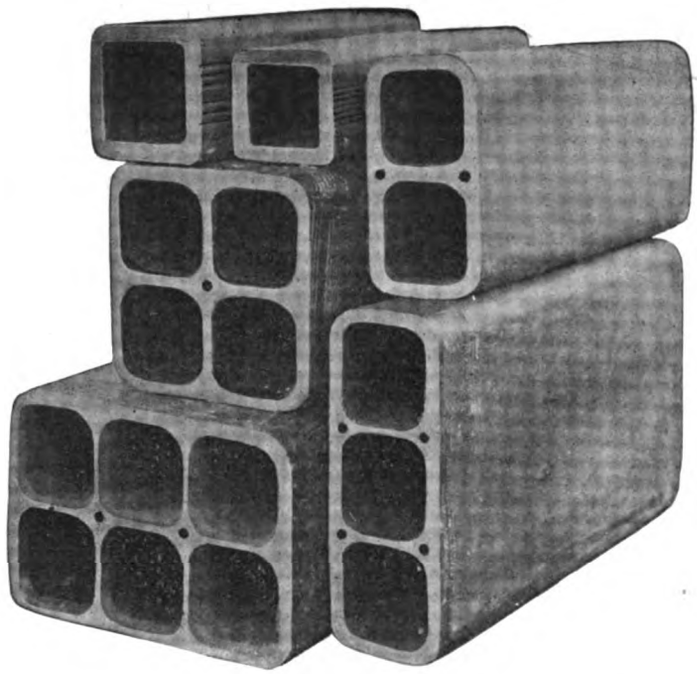

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Write for copies of our booklets on couple types and telephone batteries.

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stations' service by equipping them with POOLE Lock-Outs. When one station is in use your long distance service won't be spoiled by having someone "butt in" at another station on the same line.

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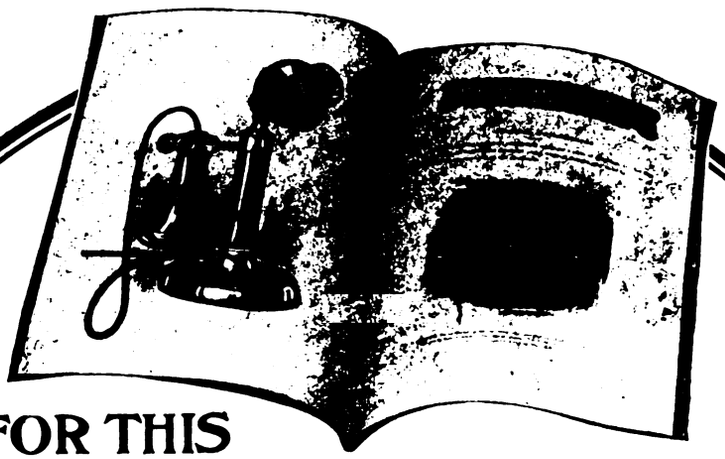

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Dean Bulletin No. 104B on magneto equipment has just been received from the press. This bulletin is practically a telephone text book printed on heavy book paper containing one hundred sixteen 8x10 in. pages.

It is the most complete bulletin yet issued, showing diagrams of circuits and describing in detail our Magneto Type Switchboards and exchange systems.

Interesting and instructive reading explains the new Dean System of HARMONIC SELECTIVE RINGING ON PARTY LINES USED IN CONNECTION WITH SMALL MAGNETO EXCHANGES.

Useful information on switchboard installing, and maintenance work, is gone into thoroughly.

We will cheerfully mail a copy of this bulletin (No. 104B) free to you. Write us enclosing business card or request on your company stationery.

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THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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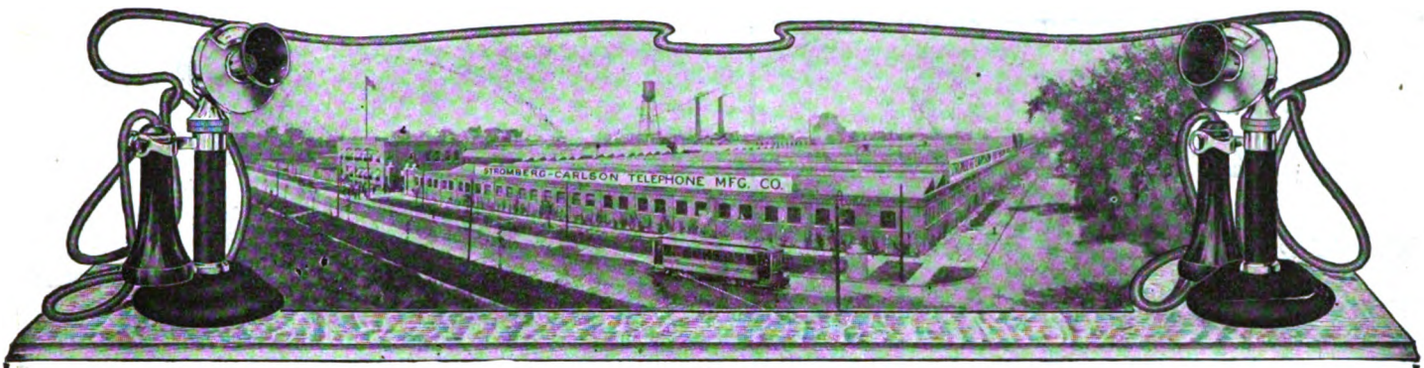

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ARE EQUIPPED WITH

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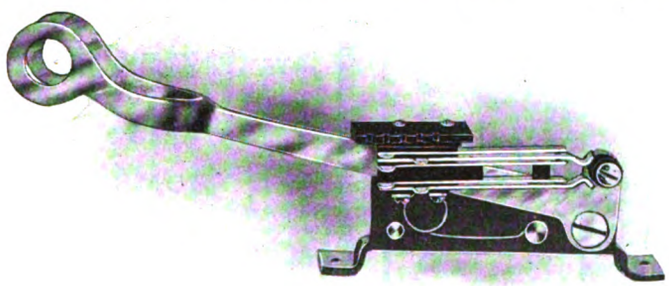

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Mechanical Construction is strong and only the best metals and insulation used. The hook lever and contact springs are mounted on the same frame and cannot get out of adjustment.

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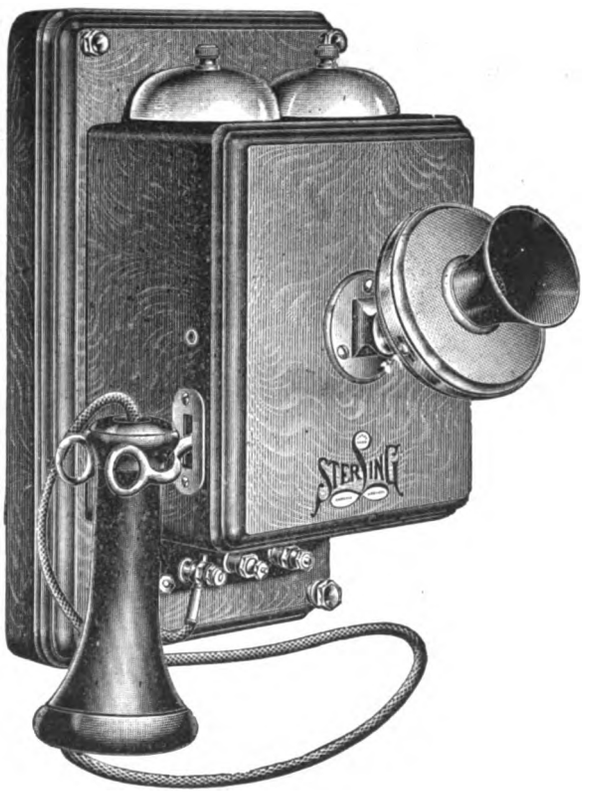

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They will act like oil on a stormy sea

THEY DO NOT GIVE TROUBLE

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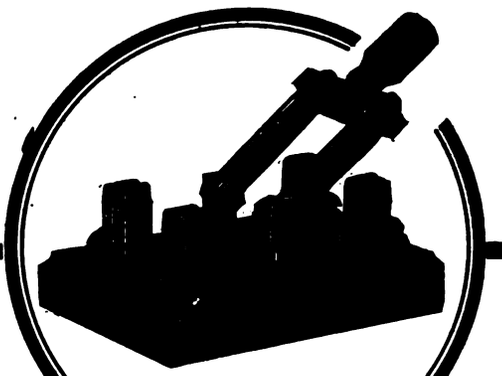

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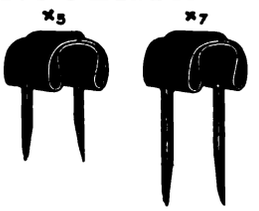

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Cleveland, O., April 10, 1907

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Yours truly,

THE WILLIAMS-ABBOTT ELECTRIC CO.

L. SANDS, President

CENTURY TELEPHONE
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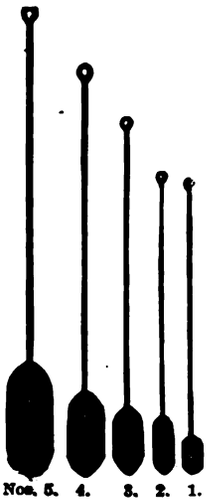

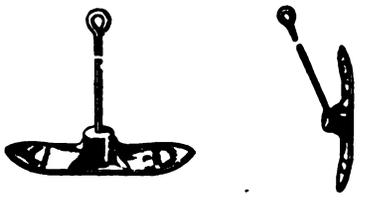

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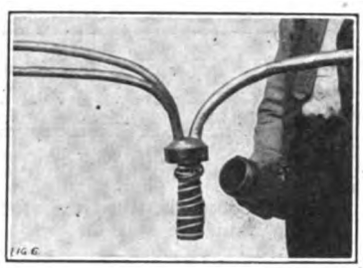

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Pendleton & Gilkey..... 38
Pignolet, L. M..... 10
Pittsburg & Lake Superior Iron Co..... 36
Plume & Atwood Mfg. Co..... 1
Porter Cedar Co..... 38
Premier Electric Co..... —
Rochester Sewer Pipe Co..... 37
Roebling's, John A., Sons Co.. 10
Schwarze Elec. Co..... 12
Simplex Electrical Co..... 1
Standard Underground Cable Co..... —
Sterling Electric Co..... 6
Sterling, W. C., & Son..... 38
Stromberg-Carlson Tel. Mfg. Co..... 5
Sumter Teleph. Mfg. Co..... 34
Telephone Printing Co..... 37
Trumbull Electric Mfg. Co..... 6
U. S. Coin Register Co..... 9
Universal Cable Grip Co..... 2
Valentine Clark Co..... 36
Vote Berger Co..... 2
Wanted, Situations, etc..... 33
Waterbury Company 1
Wesco Supply Co..... —
Weston Electrical Instrument Co..... 38
Wire & Telephone Co. of America 34
Yonkers Specialty Co..... 1

U. S. COMBINED

Cash Register and Pay Station

[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE

United States Coin Register Co.

TOLEDO, OHIO

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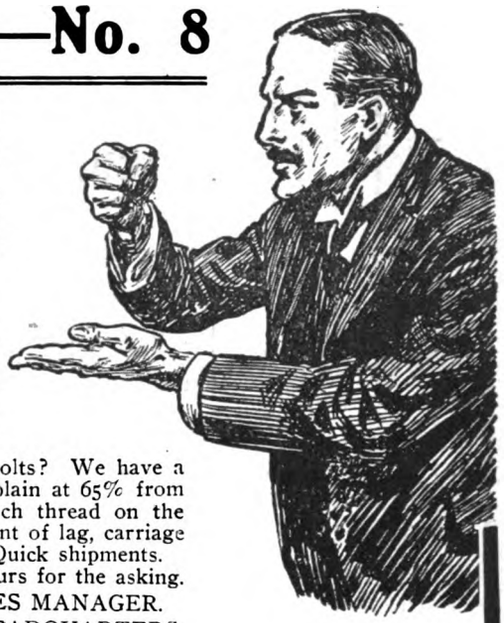
Talks With The Buyer—No. 8



Of course I like to know that the trouble man or the operators are reading these "Talks," but I am not talking to them. I am talking to the man who stands between the stockholders and the dividend, who has to make the dollars go as far as possible.

I want to put ginger into these talks, but I don't want to be funny. This buying is serious business, isn't it? No business man ever lost money by digging up facts and getting at figures. You can't know too much along this line. That's why I put prices in these ads.

TWO GOOD THINGS FOR YOU

One—We have many thousand feet of 25 pair, No. 22, .12 capacity, 5-64 inch sheath on reels of 750, 1,000, 1,500, 1,750 and 2,000 feet. Price less than 1,500 feet, 12½ cents a foot; larger quantities 11½ cents a foot. Also a lot of 100 pair same specification except 3-32 inch sheath, 600, 800, 1,000, 1,250, 1,500 feet reels, 36 cents per foot lots 1,500 feet and over. From stock, f. o. b. St. Louis. The best cable made to-day, new stock.

Two—Are you not usually held up on delivery of large size machine bolts? We have a big stock and quote ½ inch by 9 inch to 18 inch lots of 1,500 and over, plain at 65% from list. Galv. $1.50 per 100 pounds additional. No extra charge for 3 inch thread on the 9 inch size, usual charge on other sizes for extra threading. Any assortment of lag, carriage and machine bolts, large or small, entitles you to this quantity discount. Quick shipments.

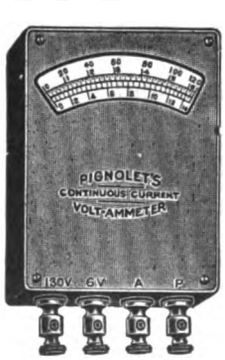
Now frankly can you beat these prices? They are only two of many, yours for the asking. Send your orders now.

THE SALES MANAGER.

MAKE ROOM 616 AUDITORIUM, JUNE NAT'L CONVENTION HEADQUARTERS.

Central Tel. & Electric Co. Makers of High Grade Apparatus. Dealers in Telephone Supplies **St. Louis and Dallas, U. S. A.**

TO BE FOREWARNED IS TO BE FOREARMED



If you are not using a measuring instrument to test your lines, get one at once, as you will need it many times before the summer comes. It would be just as sensible for a grocer to try and sell sugar by guessing at its weight as it is for you to try to locate a fault in a line by the same method. PIGNOLET VOLT-AMMETERS are designed to give the best results required for testing purposes. They are not complicated nor do they require experts to operate them. Another point in their favor is their low cost. There is no instrument on the market which will give you as accurate results at anything near the price. Hadn't you better write for prices and further particulars By buying one now you will save its cost many times over before you have had it a year.

LOUIS M. PIGNOLET, Originator of the Voltmeter Habit

78 CORTLANDT ST., N. Y.

Do you want the best wire to be obtained for Telephone Service?

Use Roebling Hard Drawn Copper Wire

Do you want a cheaper wire which will last for years and give good service on lines of ordinary length?

Use Roebling Double Galvanized Telephone Wire

John A. Roebling's Sons Co., Trenton, N. J.

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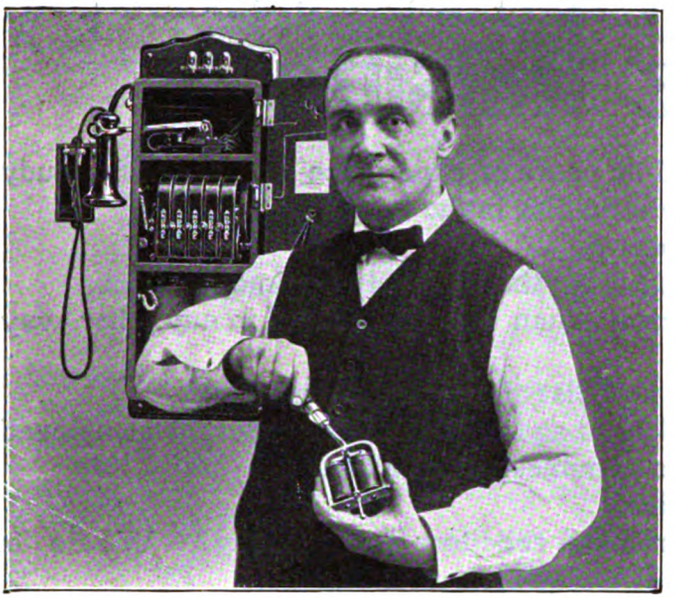
ANDRAE



No Trick at All.

Talks With the Trouble Man

Of all the luxuriant bunches of worry that spring up in the thorny path of the "trouble man," poor ringers furnish both ends and the middle.

I spent so much time and so many livery bills chasing up troubles of this kind that I about made up my mind such a thing as a good ringer would never happen.

When I first saw the ringer with the horseshoe magnet I placed all my bets on it for a sign of good luck. I knew that a ringer without a strong, permanent magnet was like a concert singer with a cracked voice—only good on paper. I knew that the strongest permanent magnets ever made were in the horseshoe form; then, when I looked at the easy, single screw adjustment and tested up the carefully balanced and well insulated coils, I knew that this "Andrae" Ringer was a winner. Since then it has taken premiums all over the United States. If you want a ringer that is *right*, day in and day out, in wet weather or in dry, on good lines or bad, try the "Andrae" horseshoe magnet type. It is like everything else in the special heavy "Giant" Bridging telephone, it is built for business and doesn't need help.

CONDENSERS

If you could see the condenser orders we have been getting since my little talk last month, and the repeat orders found in every mail from those who have tried them before, you would certainly want to get into the band wagon and put your farm lines in up-to-date working condition. One concern bought one thousand (1,000); another, that has been using them for about a year, ran their total up to nearly five hundred (500). There are too many to mention, but they are coming from every corner of the land. When you get condensers on the line, you can ring right by every station that has the receiver off the hook, and the exchange operator can sit back in his chair and laugh at the "rubber necks." We also furnish the regular type of tin case condenser at *prices that are right.* We pay all the expense of a trial, and the sooner you write us the better for you.

PRICES: Patented Type—those that connect outside the telephone.
No. 300.....85c.
No. 301.....90c.

10c. discount in lots of fifty (50); 15c. discount in one hundred (100) lots.

JULIUS ANDRAE & SONS CO., **Write for Cat. No. 11 and No. 24**
99 W. WATER STREET
MILWAUKEE

THE WHOLE SECRET

of the success of the AUTOMATIC TELEPHONE SYSTEM lies in the elimination of the girl operators. It cannot be denied that most of the troubles and much of the expense in the manual system (where operators are used) can be charged to the operators themselves.

TRUE ENOUGH,

all operators are not faulty all the time, but some of them are at all times and all of them are sometimes. But "a chain is no stronger than its weakest link," and the average telephone subscriber judges the entire service by the poorest he has received.

IN THE AUTOMATIC TELEPHONE SYSTEM

the fallible human operator has been displaced by an infallible machine, a machine that produces perfect telephone service. With the human operator disappear her faults and her expense. The former are many, the latter not inconsiderable.

THAT IS WHY

the AUTOMATIC TELEPHONE SYSTEM, having no operators, can produce a perfect telephone service, prompt, accurate, absolutely secret, at a much lower cost than for inferior manual service. That is why it is a profitable investment to put your money into an operating company that uses the Automatic Telephone System. Our Automatic Telephone System has been adopted in the following cities:

Aberdeen, S. D.
Akron, Ohio.
Allentown, Pa.
Auburn, Me.
Auburn, N. Y.
Battle Creek, Mich.
Beaver Falls, Pa.
Bellingham, Wash.
Butte, Mont.
Cadillac, Mich.
Champaign, Ill.
Chicago, Ill.
Cleburne, Texas.
Columbus, Ga.
Columbus, Ohio.
Dayton, Ohio.
Denver, Colo.
El Paso, Texas.
Emaus, Pa.
Fall River, Mass.
Grand Rapids, Mich.
Hastings, Neb.
Havana, Cuba.
Hazleton, Pa.
Holland, Mich.
Hopkinsville, Ky.
Jonesboro, Ark.
Lake Benton, Minn.
Lewiston, Me.
Lincoln, Neb.
Los Angeles, Cal.
Manchester, Iowa.
Marianao, Cuba.
Marion, Ind.
Medford, Wis.
Miamisburg, Ohio.
Mt. Olive, Ill.
New Bedford, Mass.
Oakland, Cal.
Ocean Park, Cal.
Omaha, Neb.
Pentwater, Mich.
Portland, Me.
Portland, Ore.
Princeton, N. J.
Richmond, Ind.
Riverside, Cal.
Rochester, Pa.
Rushville, Ind.
San Diego, Cal.
San Francisco, Cal.
Santa Monica, Cal.
Saskatoon, Sask., Can.
Sioux City, Iowa.
South Bend, Ind.
Spokane, Wash.
Springfield, Mo.
St. Marys, Ohio.
Tacoma, Wash.
Toronto Junction, Can.
Traverse City, Mich.
Urbana, Illinois.
Van Wert, Ohio.
Walla Walla, Wash.
Wausau, Wis.
Westerly, R. I.
Wilmington, Del.
Woodstock, N. B., Can.

AUTOMATIC ELECTRIC COMPANY

VAN BUREN AND MORGAN STS. **CHICAGO, U. S. A.**

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Soliciting New Subscribers and Rate Raising

By the use of methods that we have acquired by years of experience and scientific study, we are in a position to overcome many obstacles in the telephone business.
We can develop your exchange to its full capacity.
We can start new companies on a paying basis from the time they begin operations.
Our solicitors secure 100 per cent. better results than can be secured in any other way, and that, too, at a much lower cost.
Rate Raising is our specialty, and we have a long list of satisfied patrons.
Great care is taken in the selection of our solicitors, and only the most expert are employed.
Our prices are reasonable, and are based on a commission or salary.
Our guarantee goes with every man we furnish.
Can you afford to maintain a force of experienced solicitors permanently? We do for your benefit.
We guarantee to place your company on the road to success.
Write for our booklet, and become familiar with our proposition.

The Davis Telephone Rate Adjusting Co.

708 ELECTRIC BUILDING, CLEVELAND, O.

CALCULAGRAPH

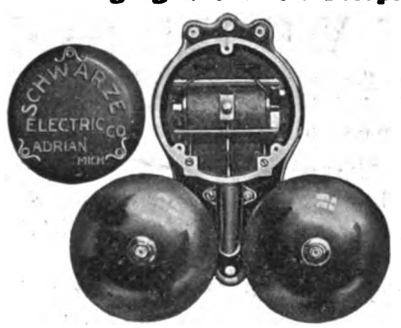
By reason of errors made by operators timing toll messages telephone companies fail in a large number of cases to receive payment for "excess time on toll service." Practice has shown that the loss of revenue resulting from such errors is equal to from six to fifteen per cent of the total receipts from toll business. On ten thousand Calculagraph records which were tested the average error was *less than four seconds per message.*

GET OUR REASONS WHY.

CALCULAGRAPH COMPANY
1437 JEWELERS' BUILDING, NEW YORK CITY
Agents for Canada: Northern Electric and Manufacturing Co., Ltd., Montreal.

Magneto Loud Ringing Extension Telephone Bells

Gongs 6-inch to 10-inch



All Resistances — All Weatherproof

Efficiency, Durability and Price will interest you.
Schwarze Electric Co., Main Office & Factory, Adrian, Mich.
Branches { Chicago, 324 Dearborn St. St. Louis, Mo., 708 Victoria Bldg. Pittsburg, Renshaw Bldg. San Francisco, 903 Atlas Bldg.

EATS 'EM ALIVE.

No mollycoddle about the ***Chapman Lightning Arrester*** for Telephone and Telegraph Lines. Explanatory booklet sent free.

H. E. Cobb, Selling Agent,
1501 Monadnock Bldg., Chicago, Ill.

Manufactured by MINNESOTA ELECTRIC CO.,
Minneapolis, Minnesota.

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VOLUME XV. *SATURDAY MAY 18, 1907.* *NUMBER 20.*

The Telephone Wire Plant*—Continued

By S. P. Grace, Chief Engineer C., D. & P. Telephone Co.

THE type of construction employed in interior block distribution is so inconspicuous as to be rarely objectionable, and in consequence its use should be adopted wherever possible. Figs. 7 and 8 show good examples. In certain districts in the neighborhood of underground subways, the buildings may be very old or may be very widely scattered. In these cases an interior block system could not be installed to advantage, and a low ring-top distributing pole should be used pending the time the block will be sufficiently built up to permit of direct connection or interior block wiring. Fig. 9 shows an example of this type of construction. Distributing poles are useful for furnishing connection between the underground system and the subscribers' premises during a period when direct connection or interior block wiring is not warranted. Ultimately, it seems certain that the distributing pole is bound to go.

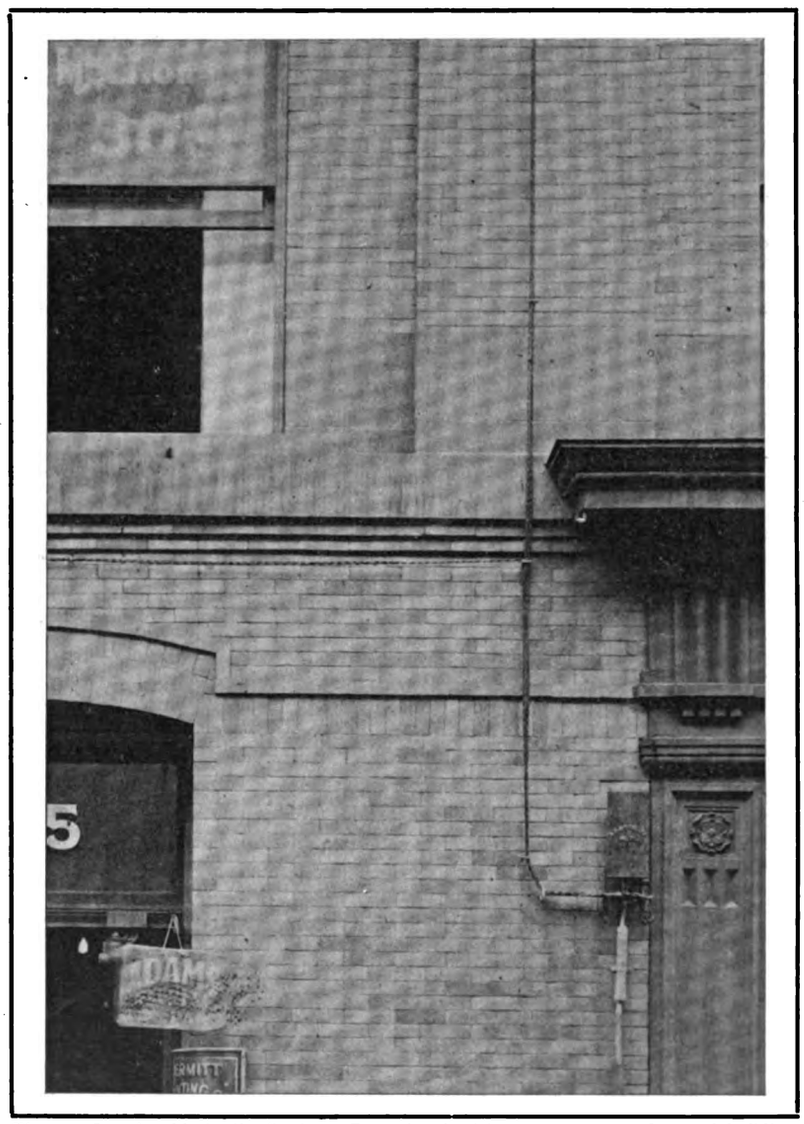

Fig. 7.—Interior block distribution. Example of wiring run to upper floors of building.

A very large proportion of telephone service must be given in scattered residential districts where the number of circuits is so small as not to justify conduit construction. If conduits were installed at once, the construction plant costs would be very materially increased and consequently the cost of service to the subscribers would have to be increased. It is therefore necessary to determine what is the most economical, efficient, and sightly form of aerial distribution. In the early days of the telephone it was but natural that the distribution of the telephone wires should follow the same practice adopted by the telegraph companies. Very soon it was found that the number of telephone wires multiplied very rapidly, which required towering poles, equipped sometimes with as many as twenty cross-arms. The invention of the dry-core lead cable furnished relief for these lines, although for many years it was the custom to use as much open wire and as little cable as possible.

When the great expansion of the telephone began in 1897 it became imperative to design other methods for aerially distributing telephone lines. The system which was finally worked out and decided upon is that known as the aerial cable or all-cable system. In this system, very low poles are used, rarely exceeding 30 to 35 feet in height. These distributing lines are placed in alleys if they are available. A cable is strung near the tops of the poles and on alternate poles are placed 10 or 15-pair terminals. Each pair in the distributing cable appears in from two to four terminals, and common pairs are so laid out in adjacent terminals that it is easy to provide for party lines. The multiplying is so arranged that when the cable becomes crowded it may be cut into two or four parts, all pairs appearing in each part, and relieved by feeder cables. No cross-arms or bare wires are used for distribution along the lead, but from the binding-posts in the cable terminal a twisted pair, rubber-covered, and braided wire is strung directly to a point within the subscriber's premises. The use of this well insulated twisted pair wire very materially reduces the maintenance. An aerial cable system of this kind with twisted pair wires leading directly to

*Abstract from paper presented at the 128th meeting of the American Institute of Electrical Engineers, April 26, 1907.

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the subscribers' houses is undoubtedly the most sightly form of aerial distribution, since all the cumbersome and troublesome open wires are done away with.

Attention is called to the grooved insulators used for supporting the twist wires illustrated in Figs. 10 and 11. Each wire of the pair occupies a separate groove, thus preventing a crossing of the wires, which sometimes injures the insulation when there is a heavy strain on the wires.

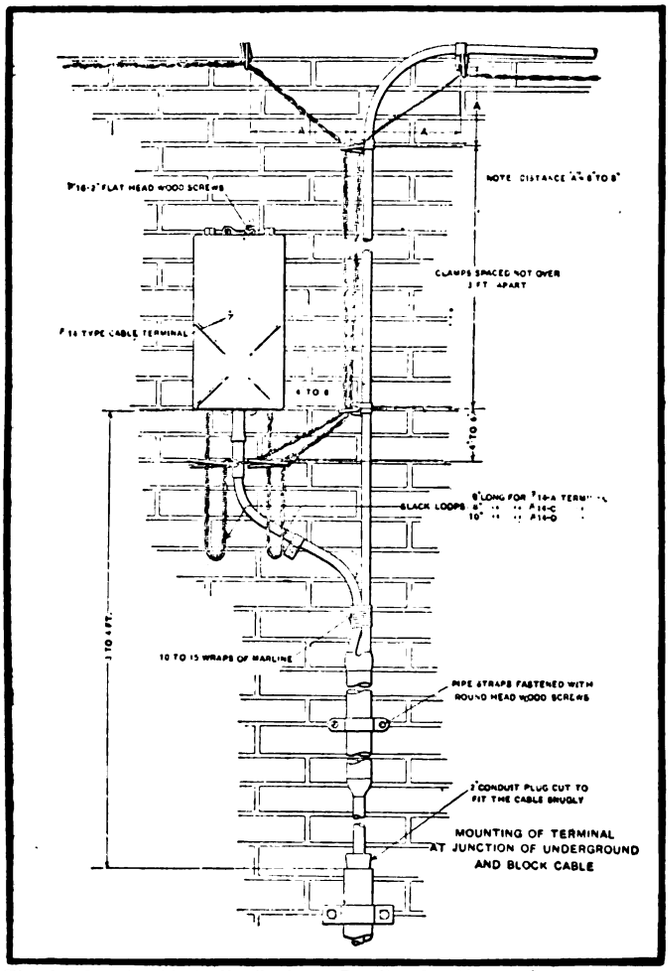

Fig. 8.—Interior block distribution. Details of cable terminal connections on wall of buildings.

There has been considerable discussion among engineers regarding the life of twisted-pair, rubber-covered distributing wire. Rubber and paint are somewhat alike, in that all kinds of mixtures are sold under their names. If the ordinary type of market wire, which is mainly intended for inside wiring, is used, the life will be much shorter. A good quality of rubber distributing wire well protected with a heavy braid should prove serviceable for ten or fifteen years. Samples taken down after having been in use for seven to nine years still show an insulation resistance of 200 to 400 megohms per mile when submerged in water.

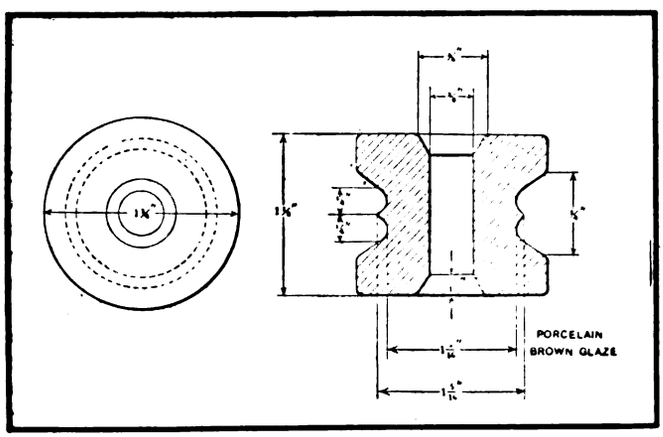

Fig. 10.—Porcelain knob used for attaching twisted pair drop wires to houses.

Until recently the type of distributing wire most generally used was made of No. 14 B. & S. gauge copper. This size of wire was not necessary for conductivity, for as a rule it was connected to a 22 or 19-gauge cable pair. This size of wire was required for mechanical strength, because the wire was strung in spans and had to be self-supporting. During the past year there has been put on the market a copper-clad steel wire which is made by a new method. Copper is welded to a steel ingot and the copper and steel drawn out uniformly together. From all the examinations we have been able to make it seems that there is a perfect union between the copper and the steel. A No. 17 B. & S. gauge copper-clad wire having 30 per cent conductivity of copper has the same tensile strength as a No. 14 B. & S. hard-drawn copper wire. This reduces the amount of material in the distributing wire one-half, and what is still more important, on account of the reduced area, decreases the amount of expensive rubber compound required to surround the wire. The amount of braid covering is also materially reduced. The finished wire is very light and easy to handle and costs approximately 30 per cent less than the No. 14 B. & S. type.

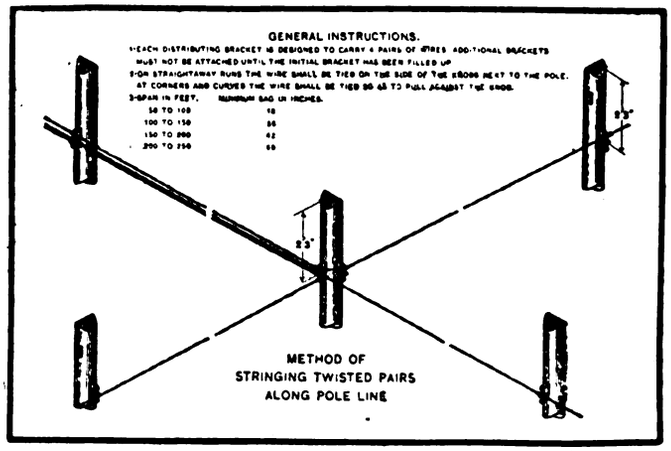

Fig. 12.—Method of stringing twisted pair wires along a pole lead.

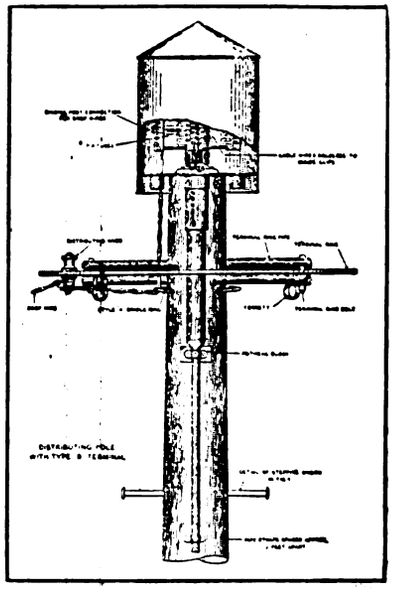

Fig. 9.—Details of circle top distributing pole.

At first sight it seems that a terminal on alternate poles must be expensive, and that terminals farther apart and with intervening distribution made by bare wire, would be cheaper. In order to determine this point clearly, a study was made showing a comparison between aerial cable distribution with taps on alternate poles and with twisted pair direct to the houses, as compared with aerial cable supplemented with bare-wire distribution. Various densities of telephone distribution were assumed, and it was found that in nearly all cases the system with taps on alternate poles was not only cheapest in first cost, but also in annual charges. Where the distribution was very dense it was found that a tap on every pole was the most economical.

(To be continued.)

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ECONOMICAL FINANCING.*

By A. T. Averill, President Cedar Rapids & Marion Telephone Company.

THE economical and successful financing of the modern telephone plant is a matter which should be considered carefully and with a view to the future by all who engage in the business, for in the careful building of the financial foundation on which the superstructure of the business is to stand depends the ultimate success of the enterprise. Without this adequate preliminary financial preparation the chances are strongly against the success of the business, for it is a peculiar fact that the larger the growth of the telephone exchange the greater the cost of maintenance per telephone, bringing with it an ever-increasing demand for capital to carry it along.

Before engaging in the construction of a telephone plant the ground should be examined carefully as to what will be required for present needs in the way of equipment, and in addition to this due consideration must be given to the probable growth of the future. Having determined as accurately as possible the size and cost of the plant which will be required for present service, and also what may be necessary in succeeding years, it is a wise plan to incorporate for at least double the amount, which it is planned to put into the plant at the start. On the organization of the company it is well to distribute the stock as widely as possible among the local investors. Every stockholder is a friend of and an active worker for the company. Each man so interested exerts his influence in its favor.

The fifty per cent. of the stock not sold should be kept in the treasury with the view of being used if required for additions and improvements to the plant as the growth of the business demands.

As an additional means of financing the company, it is well to issue bonds to the amount of about one-half the stock issued, and so far as possible these bonds should be placed with local investors, thus further strengthening the local feeling in favor of the company. These bonds should bear 6 per cent. interest and may be made to run the usual length of time for such securities.

In the construction of the plant none but the best and most approved telephone appliances should be used. In the long run the best is always the cheapest, and with the plant equipped in the modern manner the service which is rendered to patrons of the exchange will be far more satisfactory and free from causes of complaint than if cheaper and a less approved apparatus is installed.

Rates for service should be placed at a figure that will allow the company to operate with net annual earnings of from 15 to 20 per cent. Of this sum the stockholders may be paid semi-annual dividends of 3 per cent., and the balance may be used as a fund from which to pay extraordinary repairs, such as are occasioned by sleet storms and other unfavorable weather conditions and with which every telephone company is called upon to contend. From this fund must also be taken renewal repairs, and it must also carry the item of deterioration, it being a well-known fact that the life of the average telephone plant does not exceed fifteen years.

In this paper it is not the writer's intention to enter into a discussion of details of the management of a company, but so far as this branch of the business relates to the financing of the plant, it may be said that if the labor of the men who organize the business and who make the outlay is to be successful and the stockholders are to have a satisfactory return on their money invested there must be a most careful and practical management on the part of those entrusted with the daily work of the plant. The manager must be a man of ability and one who has a thorough knowledge of every detail of telephone construction and management. He must select his assistants with the view of getting the best service and must hold them to strict account for the conduct of their various departments. In the business office a complete and systematic yet simple system of accounts should be kept from which regular statements, showing the condition of the business and the amount of business transacted, with its receipts and expenditures, may be made. The matter of collecting quarterly rentals should be followed up closely. All telephone rentals should be collected quarterly in advance, and all toll line charges should be collected each month. In short, the auditing department of a telephone company should be conducted along clear-cut, well-defined business lines.

If Independent companies are to make a complete success of their business and hold the field against the encroachments of their competitors they must devote special attention to toll business, extending their toll lines in all directions, making good connections with other exchanges and covering the field so thoroughly that there will be no opportunity for competition. These toll lines should be built in the best and most permanent manner, using copper whenever possible and certainly on all main leads. Every effort should be made by the management to give the public a prompt and satisfactory toll line service, and in this, as in all other matters affecting the common good of the Independent companies they should work harmoniously together.

*Abstract from an address delivered at the convention of the Iowa Independent Telephone Association.

SEMI-ANNUAL STATEMENTS OF FINANCIAL CONDITIONS TO BE REQUIRED OF TELEPHONE COMPANIES IN SOUTH CAROLINA.

RULES requiring telephone companies to make semi-annual statements of their financial condition and other details of their business have been adopted by the Railroad Commission at Columbia, S. C. Formerly the requirement was that the companies should furnish annual statements covering receipts and expenditures as to each exchange, number of telephones in use, wire mileage, etc., but a measure has been proposed recommending having these statements filed every six months. Other rules have been amended so that telephone companies are given thirty days instead of ten in which to file their answers to complaints made against them. Hitherto petitions for a hearing in regard to rates have been received when signed by two or more subscribers; at the present time an amendment to Rule 9 states that such petitions will receive consideration if signed by one or more subscribers.

TELEPHONE BOX NO PLACE FOR A WIFE.

YEARS ago, when telephones were a novelty, a farmer from the outskirts of Manchester, N. H., called on a lawyer friend of his, now United States Senator Henry E. Burnham, residing in the city, says *Southwestern Telephone News.*

"Need any butter this morning?" asked the farmer in the course of the conversation.

"Well, I don't know," answered the lawyer. "Wait a minute. I'll ask my wife about it."

After speaking at the telephone he went on: "My wife says no."

The farmer's face was a study for a moment. Then he broke out with: "Look ahere, Mr. Lawyer, I may be a 'rube' and have my whiskers full of hayseed, but I'm not such a blamed fool as to believe that your wife is in that box."

MICHIGAN INDEPENDENT TELEPHONE MEN PREPARING IMPORTANT STATISTICAL BOOK.

IT is reported that the officials of the Citizens' Telephone Company, of Grand Rapids, Mich., are preparing a hand book of information concerning Independent telephone business in the State of Michigan. It will contain a directory of all Independent companies in the State, statistics of special interest to Independent telephone men, the names of officers and members of the three principal associations of the State and several well chosen articles on the telephone business. A feature of the book will be articles prepared by the president of each of the three associations, the Michigan Independent Managers' Association, the Michigan Independent Telephone Association and the Michigan Telephone Traffic Association. This book will be of interest to all telephone men and of great value to the Independent movement.

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Laurel, Miss., Protests Against Poor Service

ABOUT four years ago the Cumberland Telephone and Telegraph Company bought out a private telephone company in Laurel, Miss., and installed a general telephone business, both local and long distance. For the past two years the service it has been giving is reported to have been very unsatisfactory, so much so that there were many complaints from the citizens, and finally the matter was taken up with Hon. T. H. Oden, Mayor of Laurel, and the Board of Aldermen. Through them the officials of the telephone company were notified of the situation and asked to correct it. The trouble which the officials had brought to their attention was stated as follows: The service generally was bad; there were many orders for telephones and none of the orders were being filled by the company. It would take from ten minutes up to get connection with anybody, anywhere, and after one got connection it was very often the case that he did not understand the things that were being said. The operators were generally slow and unconcerned in giving service to subscribers. And finally there was a contract which the people did not desire to sign, and a great many would not sign, which the telephone company demanded that they should sign before it would install an instrument for them.

The Mayor and Board of Aldermen and the Business League of the city have finally got the company to giving fairly good service, and the main trouble seems to be now in connection with the contract that the company requires its subscribers to sign.

The contract is in the following words:

Form 71 A. ....., 190...

To Cumberland Telephone and Telegraph Company:

You are hereby authorized to place a Telephone Instrument and necessary wires and fixtures therefor, on.....service, in my house, No. .....and occupied as..... and for which I agree to pay $.....per month, from time the same is put in working order, and keep the same for one year. I further agree to keep the same thereafter on same terms until this contract is canceled by either party giving thirty days' written notice—and further agree to pay the same promptly at the end of each and every month at the office of the company.

Short Rates: For three months or less, 40 per cent. of the total annual rental; more than three, and less than six months, 75 per cent. of the total annual rental; six months, or more, the total annual rental will be charged without rebate or other reduction.

I agree that service may be discontinued for non-payment of rental whenever the same is past due, and that no rebate will be claimed or allowed for the time of such discontinuance.

There shall be no liability for cessation of service, or failure to furnish continuous service for any cause whatever, unless such cessation continues for forty-eight consecutive hours after written notice, and the only liability for failure to furnish service for a longer period will be a proportionate rebate in the rental.

I also agree to pay monthly for all messages that may be sent from my telephone over the toll lines operated by or in connection with the Cumberland Telephone & Telegraph Company. If any change in location of instrument, or character of service is desired, it will be done at the expense of the undersigned.

Party line numbers are subject to change if necessary.

.....

This contract was thought to be unreasonable and illegal, but the Cumberland Telephone and Telegraph Company absolutely refused to install telephones any more unless the subscribers in Laurel would sign this contract, although the subscribers would tender a month's rent in advance.

A majority of the telephones in Laurel, prior to some time in 1906, had been installed without the subscribers signing this contract, and hence it was thought by the officials and others that to let the old subscribers keep their telephones without signing the contract, even if the contract was legal, would be a discrimination. The Mayor and Board of Aldermen of Laurel submitted this contract to the railroad commissioners of the State for their opinion of the legality of the contract, and to learn if the company could require the contract to be signed by subscribers without installing a telephone, and at the same time force the company to comply with all the requirements of common carriers.

The railroad commissioners, after receiving the contract sent them, and the letter which Mayor Oden wrote them, submitted the matter to the attorney general for his opinion, a copy of which is as follows:

Jackson, Miss., April 25, 1907.

The Mississippi Railroad Commission,
Capitol.

Gentlemen—I am furnished with a copy of a contract which the Cumberland Telephone & Telegraph Company is using or attempting to use at Laurel, Miss., the said company refusing to install telephones unless the prospective subscribers will sign this contract. One clause of the contract is as follows:

"There shall be no liability for cessation of service, or failure to furnish continuous service for any cause whatever, unless such cessation continues for forty-eight consecutive hours after written notice, and the only liability for failure to furnish service for a longer period will be a proportionate rebate in the rental."

I am asked for an opinion as to whether the telephone company may lawfully refuse to furnish service to a citizen who declines to subscribe to this clause, though tendering in advance one month's rental and agreeing to all other stipulations in the contract.

Telephone corporations are for many purposes regarded as common carriers, and especially are they such to the extent that they must serve all alike who apply to them for services which fall within the scope of their business. Whenever they so hold themselves out to the people, they become public servants to be controlled by the public. Whenever they are applied to by anyone to perform a duty which falls within their corporate powers, the same must be done punctually, impartially, and in good faith.

Jones on Telegraph & Telephone Cos., Sect. 38.

It follows that "these companies must not only furnish services and facilities to their subscribers, but they must furnish like services to all, on like terms. They must furnish every person who requests it with a separate telephone and with telephonic communications and connections."

Central U. Tel. Co. vs. Falley, 10 Am. St. Rep., 114.

Now, this clause in the contract above quoted absolves the telephone company from all liability caused by suspension of service, even though the interruption may be due to the negligence of the company and that, too, of the grossest kind. It is well settled in this State that a common carrier cannot enter into a contract which will excuse itself from the consequences of its own negligence.

Johnson vs. Railway Co., 69 Miss., 191.

Railroad Co. vs. Abels, 60 Miss., 1017.

"Telegraph companies are—and that, too, in the absence of a statute—so far common carriers that they cannot exempt themselves from liability for the consequences of their own negligence or that of their servants by a contract made between them and the sender."

Jones on Telegraph & Telephone Cos., Sect. 37, and the long list of authorities there cited.

Of course, the same rule applies to telephone companies. It follows that since the clause quoted in the inquiry is one which the telephone company cannot enforce, it embodies a contract feature which the company has no right to insist upon as a condition precedent to giving service to an applicant who is willing to comply with all the lawful terms of the contract.

Very respectfully,

R. V. Fletcher, Attorney General.

A letter from the Hon. S. D. McNair, president of the railroad commission of Mississippi, addressed to the Mayor of Laurel, is as follows:

Jackson, Miss., April 26, 1907.

Hon. T. H. Oden, Mayor,
Laurel, Miss.

My Dear Sir—I beg pardon for the long delay in replying to your letter of the 17th, which was caused principally by my absence, and the further fact that I was waiting for an official opinion from the Attorney General, a copy of which I herewith enclose.

I am glad to say that his opinion coincides with yours, and is the position that I have taken all along.

As to the other matters complained of, we will handle them all promptly. The Cumberland Co. has certainly given your people trouble enough, and we will have things straightened out.

The opinion of Gen. Fletcher covers the whole ground, and I would like for you to let me know what steps, if any, your Council will take in the matter. Yours very truly,

S. D. McNair, President.

The vigorous action of the Mayor and his associates seems to have brought about the settlement of a question of much importance to the telephone users in his State.

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Independent Long Distance*

By E. E. England.

SO far as we can learn the building of Independent toll lines began soon after the birth of the Independent movement When the butcher, either with or without the financial aid of his fellow townsmen, began to operate his little exchange he soon came to realize that there was a growing demand among his patrons for a connection with the patrons of his friend the baker, who had been obliged to also build an exchange. He and his friend therefore decided to build a connecting line, grounded of course, between the two exchanges to meet this demand. Neither one had a thought, at this time, that he should receive any remuneration for this additional service, other than what had been previously charged for the use of the one exchange. This did very nicely for a time, but soon the patrons of each exchange began to make complaint that it was almost impossible to get service over this line as it was so frequently reported "busy." Soon the line needed some repairs and then it began to dawn upon these gentlemen that they were paying out good hard-earned dollars for something for which they were receiving absolutely nothing in return. They thereupon agreed that the grounded line should remain as it was for the free business, but they would build another line, which should be metallic, between the two exchanges, making a reasonable charge for service over the new line. Thus began Independent long distance service.

For a time after this movement began these toll lines were largely confined to counties, the various exchanges desiring to be connected with the exchange in the county seat or other large town of the county. Gradually, however, these lines were extended to cover groups of counties, and in some instances an entire State. This is the condition in which we find many of the Independent districts to-day, while in others long distance companies have been organized to build and operate the long distance lines.

Many of our Independent companies fail to realize the importance of good long distance service. It is true, when the Independent movement first began, and the telephone was considered a luxury even by well-to-do people, there was but little demand for real long distance service. That day has passed. People of very moderate resources no longer consider the telephone a luxury but rather an absolute necessity.

The government has been increasing its facilities for the rapid handling of the mails, the Western Union and Postal Telegraph companies have been extending their lines, and yet the people are demanding better and more rapid means of communication. This condition was foreseen by the Bell company and when forced to the conclusion that the Independents were here to stay they at once began the systematic development of their long distance lines.

That the Bell company does not have circuits enough to at all times handle even its own business is a fact well known by any one who has even occasionally used its toll lines. If with but 38,836 feeders, or branches, in Iowa, to draw from it finds its trunk lines so congested with business that at times it is forced to keep patrons waiting an unreasonable length of time, it will require no skilled mathematician to deduce the fact that, with 184,689 subscribers on December 31, 1905, with the tremendous increase in the number of telephones since that date and with Omaha and Council Bluffs on the west and Chicago on the east just opening or opened to the Independents, it will be quite a while before one need fear an over development of Independent long distance lines in Iowa. With San Francisco, Portland, Tacoma, Denver, Omaha, Chicago, Detroit, Milwaukee and now staid old Boston safely captured by the Independents there will be a greater demand than ever for Independent long distance service.

The question now before us is how may we secure these necessary lines to handle the business?. Who shall build and operate these long distance lines? Shall it be the local company or shall it be a separate long distance company? Perhaps there may be a difference of opinion concerning these latter questions, some holding to the one opinion and others to the opposite. The writer believes a long distance company could do the work in a more satisfactory manner and will cite one instance in support of this opinion.

In a certain commercial center is an Independent telephone company having a good local exchange and owning and operating some iron toll lines. The neighboring Independent companies have been trying for more than two years to get in and through this city with copper circuits. Without calling in question the business judgment of this company or its manager, the fact remains that there has for some time been a No. 10 copper circuit 12 or 15 miles from this city upon each side, but that gap remains unclosed to this day. No difficulty of this kind would be encountered if a long distance company were building through that territory. It may be best in one section for the local exchanges to unite and build their own long distance lines while in another section it would be more satisfactory to all concerned to have an Independent long distance company build them. Whichever plan is adopted let those interested not lose sight of the fact that for satisfactory service it is absolutely necessary that these lines be built in accordance with modern specifications. As to securing the necessary lines to handle the business, whether these lines are built by the local exchanges or by a separate company, there must be something to convince the prospective investor that the money he contemplates investing in Independent long distance lines will be safe, and that certain and reasonable dividends can be paid. Is it possible to do this while each exchange goes on the principle, "Get what you can and can what you get"? It certainly is not.

Upon this certainty the Iowa Clearing House is founded. The aim and purpose of the Clearing House is to so divide the money received from the use of the toll and long distance lines that the owner of each mile of line over which the message has passed will receive his just proportion of the fee derived therefrom. This is the only fair and equitable method of division, and the only method under which one can ever hope to secure proper development of the Independent long distance lines in Iowa or elsewhere. It may be that on account of local conditions some are or have been receiving under the plan of keeping all toll fees collected, more than they would under a fair division, but they would be very short-sighted indeed if this were permitted to stand in the way of progress. Under Clearing House methods these much desired long distance lines will not be long in building and the fees from the long distance calls which are now sent to the monopoly will come into the Independent treasuries.

One of our friends wants to strike out of the English language, without the sanction of the "powers that be," the old and honored word "toll" and use only long distance. His reason he states as follows: "We are finding in this locality that our opponent hopes to fix the idea in the minds of the public that it is *the* 'long distance' system, and the only one. The result would be that when one was asked to call another on the long distance line the call would unconsciously be understood to mean 'monopoly' service, in spite of the fact that the one speaking had in mind the Independent system."

This is something that should not be permitted to continue. Independent companies should by judicious advertising, in directories, in newspapers and by other approved methods, inform the public of the service they are prepared to furnish and so educate them that when desiring long distance service they will naturally and always "Look for the Shield."

* Abstract from an address before the members of the Iowa Independent Telephone Association at the annual convention.

Flat Rates *vs.* Measured Service—Continued

While Preparing a Report on Telephone Conditions in Chicago, Under Instructions from the City Council, the Special Committee of Telephone Experts, Messrs. Jackson, Crumb and Wilder, Had Exceptional Opportunities for Studying the Effect of Measured and Flat Rate Systems of Charging on the Cost and Efficiency of Telephone Service. What They Have Found, and the Conclusions They Draw, Constitute a Document of Great Value and Importance. The Following is an Abstract from the Part of Their Report Dealing With This Subject.

A RECORD of observations made for the purpose of learning the relation between the number of times a line is used in an hour and the number of times a line is reported busy during the hour is shown in Chart No. 11. By the phrase, the number of times a line is used in an hour, we mean the number of actual messages, outgoing and incoming, which pass over the line in the hour. Chart No. 11 is plotted from data collected by the Chicago Telephone Company through a special observer, who

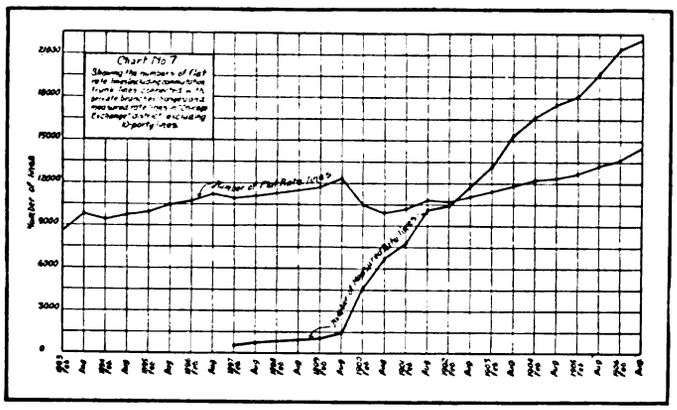

Chart No. 7.

kept up a series of careful observations on several hundred lines. The data observed have been plotted, using the number of messages passing over the line, that is, the number of times the line was used in an hour on the horizontal axis and the number of times during the hour the line was reported busy on the vertical axis. Each circle laid down on the plat represents the averages of a number of observations as shown in the table accompanying this chart and the observations represent data derived from numerous lines, so that the points may be assumed to be fairly accurate in representing the facts. The circles represent the average data obtained and we have drawn a curved line to represent the average of the positions of the circles. It will be observed from this curve on the chart that if a line is used eleven times an hour it may be expected to be reported busy at least twice during the hour to calling subscribers who desire to communicate with that line; but if it is used twenty-one times an hour it may be expected to be reported busy not less than ten times. This plainly shows that *the unavailing calls increase in a tremendous ratio as the load on a telephone line increases.*

Our chart No. 11 is based upon the number of times a line is used in an hour, but we will point out here that almost all lines that are used in flat rate service are very much busier during one hour of the day than during any other hour of the day; that is, a large proportion of the total calls over a telephone line during a day are made within certain specific "busy" hours, which makes the busy reports much more numerous during certain parts of the day than the average number of calls might indicate.

Chart No. 6 shows the growth since August, 1901, of the different classes of service in the Chicago exchange district (that is, excluding the neighborhood exchange telephones). It will be observed that during this period ten-party line telephones, which are nickel prepayment telephones, and therefore belong in the measured rate class, and the other measured rate telephones, have increased steadily. The private branch exchange telephones have also increased, and a considerable portion of these also belong in the measured rate classification. The flat rate business and residence telephones have not increased in a large degree. We were not able to obtain the actual data for the two preceding years, but the measured rate service was proportionately increasing during those years, it having been first introduced about 1899; and our chart No. 5 shows that during these years' increase of the measured rate service, from 1899 to 1906, the average number of calls per telephone per day has consistently decreased. This has helped to make it possible for the Chicago Telephone Company to steadily decrease the average charges per telephone within the Chicago exchange district. That such a decrease has occurred is plainly to be observed from our chart No. 12, which shows two curves, one indicating the average number of telephones in use in Chicago during each year from 1897 to 1906, which is indicated by a rising line from left to right as the dates advance, and another curve showing the average rate paid per telephone during the year, which is indicated by the falling line as the dates advance. The average rate paid in 1897 was $123.53, as indicated on the chart, and it has fallen year by year since until it has now become as low as $53.29. The figures on this chart do not include "neighborhood" telephones.

With continued careful management, improved methods of keeping records for the determination of the costs of the different classes of service, and a greater extension of the measured rate service, we believe that the Chicago Telephone Company, in case it should be granted a franchise, can continue this decrease in the average yearly rate that the subscribers may pay per telephone, until the average yearly rate does not exceed forty dollars, or perhaps less, and a large proportion of the telephones will be paying not more than eighteen dollars per year. On the other hand, our study of the problem convinces us that an extension of the flat rate telephone service would tend to so greatly increase the useless calls over the telephones, and so overload the lines, that the unavailing calls would in-

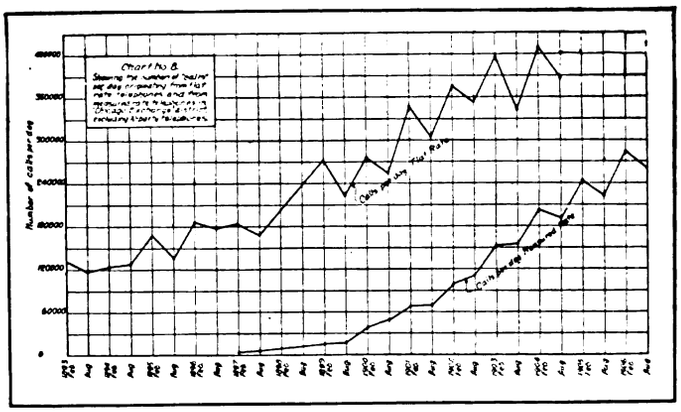

Chart No. 8.

crease tremendously, making the daily calls per telephone even larger than they were in 1896, and thus increase the annual expense of the service so largely that the average price per telephone would be given a tendency to rise instead of fall.

It is a tradition in telephone circles that the service per tele-

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phone costs more as the number of telephones connected with the plant increases. As the number of telephones increases, each

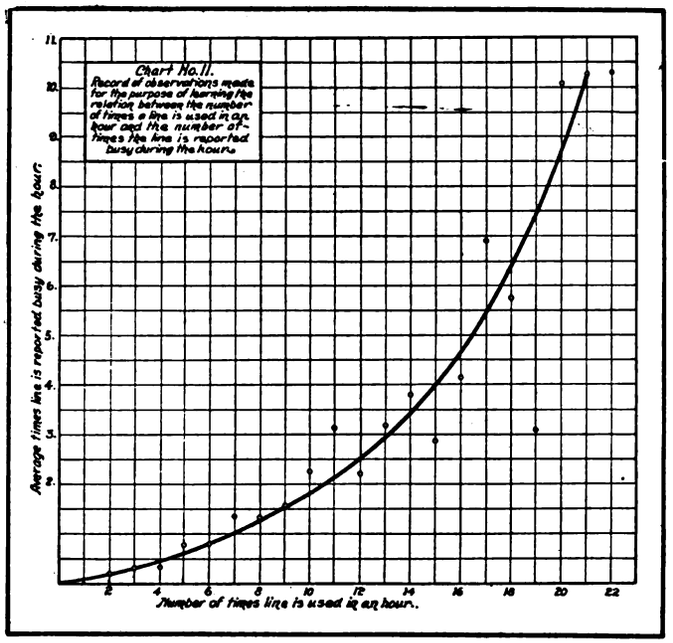

Chart No. 11.

subscriber has the opportunity to call upon more people by telephone, and the law of averages would indicate that the number of calls per day from each telephone should increase, thus making the service more expensive to the operating company, provided the service is flat rate service and unnecessary use of the telephone is not deterred by a measured rate charge. This condition seems to have worked out in practice, according to the statements of telephone companies at Cleveland, Indianapolis and elsewhere, and flat rate service seems to increase in cost per telephone as the number of telephones attached to a system increases.

On the other hand, a different condition exists in connection with measured rate service. With the measured rate service the message is the unit instead of the rental of the instrument; and it is the message that the subscriber ought to pay for, because it is for the purpose of sending his messages that he provides himself with a telephone. With measured rate service, and a reasonable use of the telephone lines, the unavailing calls are reduced to a minimum. The number of calls per telephone per day, apparently, are not inclined to increase as the system increases in extent. This is illustrated in our charts Nos. 9 and 10. But the total number of messages handled increases

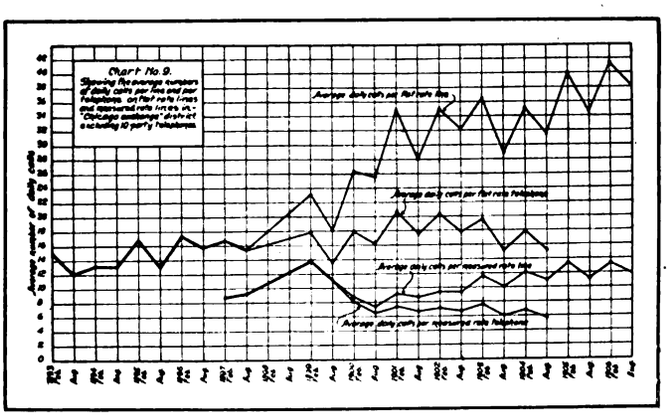

Chart No. 9.

approximately in proportion to the number of telephones. Under these conditions, the ordinary laws regulating the difference between the cost of producing articles in large and small quantities comes into play, and the actual cost per message ought to steadily decrease. Since it is the messages that are paid for under the measured rate system and the actual cost per message ought to steadily decrease as the system enlarges, the average amount paid by each subscriber will decrease if the subscribers limit the use of their telephones to their actual needs, and the telephone company is well managed.

The difference thus arising between flat rates and measured rates is very marked. The flat rate telephone user tends to increase his number of messages as the system enlarges, so that the average calls per day per telephone may be expected to increase and the proportion of unavailing calls also to increase. The consequence is that the company is forced to handle more calls per telephone as the system becomes larger, and the price per telephone has to increase under flat rate charges; while the *subscribers limit their use of the telephone to their actual needs under measured rates and the number of calls per telephone does not have a tendency to increase as the system increases in size after it has reached a considerable development* such as is now found in the city of Chicago. Under these conditions the principle of wholesale production makes it possible for the company to reduce its cost of operating per message and thereby reduce the average price charged the subscribers.

The telephone hanging on the wall appeals to the average telephone subscriber as constituting the total expense to the company through the maintenance of the instrument and lines. The maintenance and the interest on the equipment does con-

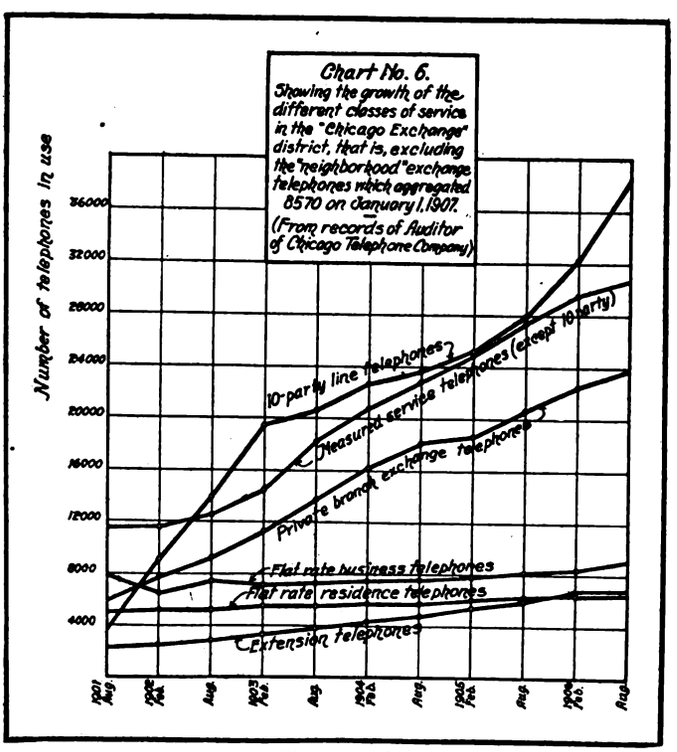

Chart No. 6.

stitute a considerable expense to the company, but a great deal of the expense to the company is due to the actual cost of handling each message.

Moreover, the more calls that are made per line, the larger must be the switchboards provided by the company for making connections for communication between subscribers' lines, since each operating employe can only take care of a limited number of calls per day, and if the number of calls per telephone increases, each operating employe can take care of the requirements of fewer lines. As the operating employes are increased, the switchboards must be increased at large expense to afford additional operators' positions, and all of this increases the annual expense for telephone service. The deterrent of a small charge per message, varying from a nickel downwards, depending upon the number of calls used per year, is sufficient to overcome much of this difficulty and to reduce the telephone service to a fairly uniform and business-like basis.

(*To be continued.*)

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THE EDITOR'S PAGE

GOOD ENGINEERING.

NOW that the construction season has opened, and Independent telephone managers are arranging for the extension of their lines, both toll and local, it behooves the most careful planning on their part to so arrange that their work will be done in such a manner as to decrease the depreciation charge, the maintenance cost, and also to bear in mind the most efficient and labor-saving devices, so that the cost of construction may be kept at the minimum.

By giving some forethought to the construction work it will be possible to handle it to the best advantage, and at a lower cost than would otherwise be the case. If routes are laid out carefully, the population in the section to be built, and the probable growth in that section carefully figured, plans for future extensions can be developed to avoid the necessity of reconstruction in that particular section at a later date. Particular attention should be given to the securing of right-of-way permits, so that in the event of increase of realty values there will be no dispute as to the title on the ground occupied by lines.

Only the best quality of poles should be used. It is good policy in purchasing poles to secure them from some reliable concern, that may be held strictly accountable and to see that each pole will satisfactorily fill the specifications as laid down by the Cedarman's Association; that each is straight and has no butt rot. There are so many different kinds of pole preservatives on the market at the present time, which may be secured at trifling cost, that it will pay the exchange manager to look into this with the idea of impregnating the portion of the pole buried with some preservative so that it will not be affected by moisture ,and thus weakened, as is usually the case.

Much time may be saved in the construction of lines by taking advantage of the numerous tools and devices, such as pole derricks, post hole diggers and the like, which may be secured at a small initial expense, but which will in the end make large returns on the investment. It is good policy, not only for the sake of appearance, but for increasing the length of the life of the poles, to give them at least two coats of some good pole paint.

The poles should be well guyed, using substantial anchors that will have sufficient holding power not only to hold the lead in shape with the present lines upon it, but also allowing for future extensions. In this connection much time and money may be saved by resorting to devices of this nature, which are so plentiful. It is especially important that the leads should be well guyed into shape before the stringing of the wires. By guying the poles tightly before the lead is full the tension on the wires will tend to pull the anchors into a more solid position, and thus give them greater holding power.

In the guying and roofing of poles, it will be well to adopt some uniform method, such as is found in the specifications of any large operating company. The cross arms should be placed on the poles solidly in the most approved manner, together with the pins and insulators.

In the construction of toll lines it will be well to follow the specifications used by leading toll line companies, in order that the local companies in connecting with toll line companies, or giving toll service on their systems, may not handicap the toll service by having inferior construction.

Careful consideration should be given to the question of wire, using the highest quality and that best adapted for the purpose. The question as to tensile strength, the amount of sag at different temperatures, the carrying capacity of the wire and various items of a like nature should be well considered by the builder in order that best construction may obtain. The question of stretching wire with the greatest economy should be taken into consideration, so arranging that all of the wires on a cross arm may be pulled at the same time. The use of a horse or windlass in this connection will prove effective, and will result in the saving of much unnecessary labor on the part of the construction corps.

The important thing, however, is in knowing at all times exactly where one stands on the subject of construction, and too much thought and study cannot be given to this question by men who are desirous of uplifting the service and increasing the revenues of the company, and of lengthening the life of the construction to the maximum.

The exchange manager no doubt has records of some nature in his possession as to the cost of various leads of telephone lines which he has constructed in the past under various conditions. It will be well to make records of costs of construction and maintenance of a lead constructed under the most approved up-to-date specifications. Then by a comparison of these two sets of records it will be found that, while the initial cost is greater for first-class construction, yet in the end the difference will be so much greater on the credit side of the ledger that he will never again resort to construction that is not of the very highest grade.

The question of standardization of line equipment is one which has been bothering all Independent telephone operators for some time, and can be solved in no better way than by each individual construction man giving his very best thought and energies toward putting his lines in such condition that it will be impossible for any one to build better.

THE MOTORCYCLE.

IN these days of heavily loaded farmers' lines and a well developed system of toll lines, which are ever busy, the motorcycle has shown its advantage over the "horse and" method of handling trouble.

A good motorcycle placed in the hands of a good troubleman constitutes a combination that is hard to beat for trouble clearance. Maintenance is reduced to a figure that is barely perceptible, and where maintenance goes down, the dividends come up.

There is in use in an exchange in the middle west a motorcycle which the local manager states has traveled 5,700 miles, 4,500 of which were made on one pair of tires, and the repairs including the new pair of tires totalled $30.00. This, taking into consideration the amount of territory covered, the time saved, and the amount of good done by placing the toll and farmers' lines in service quickly after they were in trouble is but a small portion of that which would otherwise have been lost.

The motorcycle has passed the stage of experiment, and as a helpful adjunct to the troubleman's kit is without comparison. To the wire chief who has a handy man around, and who dreams of "two-bit maintenance," the motorcycle will be a godsend; to the other fellow who will have to send to the shop for every little repair—don't touch it; to the telephone company, watch it and compare your maintenance cost in a given territory after you have adopted it with costs in the same territory previous to that time. Note the value of the time saved on toll line trouble and compare it with the same lines before the advent of the motorcycle. The value of the machine will at once manifest itself. The results will be pleasing.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. McMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

TELEPHONE AS A NECESSITY FOR MINORS.

We are trying to collect a bill, incurred by a young man under age, for telephone rental. He had a telephone put in the house where he lived without his father's order, and we are trying to make him pay for it. This we cannot make him do, as he has no property nor funds, and his father refuses to pay, saying that he did not order the telephone. The father had the telephone taken out before it had been in the house very long, but we were put to considerable expense in installing it, and there is some rental due for the time it was there. Can we make the father pay the rental and cost of putting the telephone in? A. I. J.

THE father is liable for necessities furnished to his son, whether they are ordered by the father or not. If a telephone comes within the category of necessities, the father can be made to pay for it; if it is not a necessity, he is excused. What a necessity is depends somewhat upon the conditions and circumstances of the family, but we see of no way a telephone instrument could be considered as a necessity when furnished to a minor son and know of no case where it was held to be such. If the father did not order the telephone taken out as soon as he found it was installed, or if he permitted the men to come in the house and connect it, he might be held to have ratified his son's action and to have appropriated the contract himself.

BONDS AND NOTES TAXABLE AS PART OF CORPORATE FRANCHISE.

THE revenue agent for the State at large, of Kentucky, recently brought suit against the Cumberland Telegraph and Telephone Company, charging that in the years of 1900 to 1904 the company was the owner of bonds, notes, accounts, cash on hand, and stock in other corporations to the value of $5,000,000.00, which it had failed to list for assessment as required by law. The company contended that the property mentioned was included in the assessment of its franchise tax by the board of valuation and assessment, and was, therefore, not subject to assessment by the Board of Supervisors of the county in which suit was brought. The State law requires this board to assess a franchise tax upon all companies, which is obtained by fixing the value of the capital stock of the corporation, and from the amount thus fixed deducting the assessed value of all tangible property assessed in the State or in the counties where situated. The court held that the property involved in this suit was of an intangible character and not subject to assessment by the local assessor. Judgment was accordingly entered for the telephone company. Commonwealth vs. Cumberland Tel. & Tel. Co., 99 S. W., 604.

INJURY TO SERVANT EMPLOYED OUTSIDE REGULAR DUTIES.

THERE is no absolute rule applicable to all cases by which to determine the question of the liability of a company to its employee where the latter is injured in the performance of a duty which he was ordered or requested by the employer or his representative to perform, but the question of liability will depend upon the circumstances in each case. Where the master or his representative orders or requests the servant to engage in an employment outside the scope of the duties which the servant contracted to perform, the outside employment being attended by unknown and unobservable dangers, and the master gave no instructions with respect to such dangers, the servant is not deemed to have accepted the risk of such dangers in case of injury, and for such injuries the master is liable.

In the case in which the above principles were enunciated, a pipe fitter, employed by an electric company, was sent into a basement in the company's power house to assist in splicing a wire that had unexpectedly broken, thus stopping the operation of the company's line. Although the wire was a dead one when the employee went to work upon it, a 500 voltage current of electricity was unexpectedly turned on the wire and passed through the employee's body, causing his death. The company was held liable.

In the same case, an electrician of seventeen years' experience was asked whether precautions were necessary in repairing broken electric wires, and this question was held properly asked and answered by the witness. Jacksonville Elec. Co. vs. Sloan, 42 S., 516.

SALE OF TELEPHONE INSTRUMENTS AND TELEPHONE STOCK.

A PURCHASER contracted to buy a telephone instrument in the house of a firm and also telephone stock. It did not appear whether the stock was in a corporation or in an unincorporated concern, but this was held to be not material. The seller, after the purchaser took possession of the premises, offered to deliver the stock, and demanded payment, the telephone instrument being in the house occupied by the purchaser. It was held that the seller's offer to deliver the stock and the purchaser's refusal to accept it and carry out the agreement entitled the seller to recover the price. Reiley vs. Stephenson (Mo.), 94 S. W., 781.

NOT DESTRUCTION OF PROPERTY, BUT ACTION IN THE COURTS IS CITY'S REMEDY.

THE Illinois Court of Appeals has sustained the decision of the Circuit Court at Rock Island granting a temporary injunction to restrain the mayor and city from interfering with the apparatus of the Central Union Telephone Company, and the operation of its system. In 1887 the company was granted permission by an ordinance to erect a plant, but later this ordinance was repealed, and some of the company's poles chopped down because it refused to remove them. The court held that the ordinance did not grant a franchise, but simply a license, and thus holds that the ordinance does not contravene Section 14, Article II., of the Illinois Constitution, providing that no law shall be passed making an irrevocable grant of special privileges. The court holds the ordinance a contract that cannot be repudiated by the city. While the ordinance did not limit the period during which the company might maintain poles and wires in the streets, it did make a grant only for the life of the company in this instance, ninety-nine years from its organization in 1883. The court pointed out that the condition of the company's apparatus and the conduct of its employees was not as reprehensible as alleged by the city. The point of exorbitant rates could not be raised, because the city did not establish rates of telephone service in the ordinance of 1883, nor reserve the right to regulate that subject. The court held that, if the contract had been broken by the company, the city's remedy was not the destruction of property, but an action in the courts.

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QUERIES

CABLE CAPACITY AND SPECIFICATIONS.—(861.)

Will you kindly advise the writer the manner in which the capacity of a cable may be measured? Also state the correct capacity to specify in purchasing cable. Any information you may be able to give us along this line will be greatly appreciated. A. D. S., Iowa.

A capacity test of cable is made in the following manner: First connect the two wires to a source of power, such as storage or primary batteries, allowing the cable to charge for about one minute. Then allow the cable to discharge into a voltmeter or galvanometer, noting the deflection. Then perform the same operations with a condenser of known capacity. The capacity of the cable will be in direct ratio to the capacity of the condenser according to the deflection.

In purchasing cable the following specifications are those generally used by the larger telephone companies: Copper conductors, 19 B. & S. gauge, 98 per cent. conductivity. Insulation to consist of one or two paper tapes. Conductors to be twisted in pairs (one of the pairs to have colored paper). Length of the twist not to exceed 3 inches. Pairs to be formed into a core arrangement in reverse layers. Core to be dry (unsaturated) except for two feet at each end. Sheath to be free from defects; to be of lead alloy with two and a half to three and a half per cent. tin, and of uniform radial thickness of 1-12 inch for 1 to 49 pairs; 3-32 inch for 50 to 99 pairs; 1-8 inch for 100 to 150 pairs. Insulation resistance at least 100 megohms per mile when laid, spliced and connected to terminals ready for use. Mutual electro static capacity (any conductor measured against its mate, with remaining wires grounded to sheath) .54 average and .6 maximum. The mutual capacities stated are equal respectively to .8 and .85 microfarad per mile regular capacity (each conductor against all the others grounded to the sheath).

These specifications are for the best class of cable construction, and where it is desired to keep the cost of maintenance to the lowest possible point it is advisable to use these specifications.

NUMBER AND SCALE OF VOLTMETERS ON TWO-POSITION TEST SET.—(862.)

Being about to install a second position on our test set we would like to ask your advice on some points about which we are in doubt. In the first place, is it necessary or desirable to use a voltmeter at each position or can we put in a switching key so that both testers can use the same instrument?

If we install a second instrument ought it to be the same as the first, or should they have different scales or resistance, so that we can use them on different classes of lines? P. F.

We understand that at first your second testing position will not be constantly in use, but rather designed to facilitate the prompt location of troubles in times of emergency, as, for instance, after a storm.

Under the circumstances it would be possible, by installing a switching key, to use the same voltmeter for both positions, and so make a slight saving in the initial expense. Such an arrangement, however, would not be economical in the long run. At times when both men are required to work together there would unavoidably be more or less confusion and interference with one another which would be productive of much annoyance and delay. Any saving effected by putting off the buying of a second instrument would be soon offset by the cost of the wasted time of the wire chief and his assistant.

With regard to the type of voltmeter for the second position, if the first is of satisfactory range, it is desirable to have a similar instrument at the second position. The two testers should be able to change positions at any time, and to work at either position with equal facility. Practice in testing enables a man to work very quickly, judging conditions on the line accurately from the behavior of the index pointer of the voltmeter. If the two instruments were not alike each would have to adjust himself to new conditions when he changed from one position to the other. This would unavoidably lead to a loss of time, and occasionally in the rush of work would be a source of error. By the use of similar instruments any possibility of these undesirable things would be avoided.

GENERATOR NOT UP TO VOLTAGE.—(863.)

We have a ringing machine for delivering pulsating current, belted to a small alternating current motor. It has never given satisfactory results, as it causes the bells to tinkle, but they will not ring sharply. We think the fields are weak and it does not come up to voltage. Can you suggest any way in which we can tell what is the trouble? R. P.

It is very likely that the trouble is simply that the armature of the machine does not rotate rapidly enough. We suggest that you find out what should be the proper speed in the first place to give the correct voltage to ring your bells. This should be furnished by the manufacturer either upon the name plate of the machine or may be obtained from him by asking him to refer to his records. The speed of the machine as it is in actual service should then be taken with a speed indicator. If it is not enough take also the speed of the motor, and measure the diameter of the motor and generator pulleys. A new pulley should be provided on either the generator or motor of such dimensions as to make the diameters of the two pulleys inversely proportionate to the required speed of the machines. As soon as you have the correct ratio between the pulleys you will probably have no difficulty in getting your generator to ring its bells.

TESTING BAD CORDS.—(864.)

Will you please describe to me the best way to test bad cords in a switchboard. What I want is some method which will enable the night operator to run through them quickly every evening after he has got through the regular rush of operating. B. N.

It is quite probable that you will have a noisy line in your exchange, or a line parallel to an electric light circuit. In the latter case, even if the line is quiet, it can be made noisy by taking out the mica between the carbons, or better still by grounding it by a little piece of wire. This will give you a steady hum upon one line. Cords can be plugged into the jack to which this line is connected, and as each cord is plugged in the corresponding listening key should be thrown. The operator should move his hand back and forth along the cord, bending it slightly and twisting it. Any crackling noise will indicate a broken piece of tinsel, and the cord should be marked in some way to indicate that it is defective. One method used is simply to draw the cord partially out of the socket and bend it over and insert the plug, tip downward, in the socket beside the cord. The trouble man upon going to work in the morning may withdraw these defective cords and repair them.

WIRES RUN IN TWISTED PAIRS.—(865.)

Our office is so arranged that it is necessary to run battery wires for transmitter supply to a magneto switchboard in a location where it would be difficult to conceal them. As they can be made up into a much neater cable if run straight than is possible with twisted pairs we would like to do this if it will introduce no difficulty. Will you please tell us how far wires may be run together without twisting before cross talk is noticed between two circuits? L. C.

The distance depends upon various conditions, such as the character of the insulation and its thickness, and a few other things; but it is sufficient to say that when wires forming both sides of a circuit are run untwisted beside another pair for only a few feet serious cross talk will be introduced in the switchboard. This is especially true of wires forming a primary talking circuit in a magneto board. Wires forming separate pairs should be twisted throughout their entire length, even if it is necessary to sacrifice appearances.

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IN THE OPERATING FIELD

FIFTEEN THOUSAND TELEPHONES ORDERED FOR MILWAUKEE INDEPENDENT SYSTEM.

AT the annual meeting of the Milwaukee Independent Telephone Company, which has held on April 30th, several important matters were considered. The company has made a contract for furnishing material and performing the necessary labor to complete the installation of a telephone system with 15,000 telephones. By the terms of the contract the construction company is to provide the necessary grounds and buildings and install sufficient subway and main pole leads to permit of the increase of the plant to 75,000 telephones, as the growth of the business may require. This plant under the terms of the contract is to be completed and in operation by June 1, 1908. The directors elected at this meeting are as follows: John M. Baer, W. W. Cargill, C. J. Chapin, H. D. Critchfield, Howard Greene, J. C. Harper, B. G. Hubbell, Alvin P. Kletzsch, George P. Mayer, Wilmer Seig, Richard Valentine, J. S. Van Nortwick, E. A. Wadhams, Richard Wagner, J. B. Whitnall; and the officers are: President, H. D. Critchfield; vice presidents, E. A. Wadhams and J. S. Van Nortwick; secretary, C. J. Chapin; treasurer, Howard Greene.

MT. VERNON TELEPHONE COMPANY HOLDS ANNUAL MEETING IN NEW BUILDING.

THE Beaumont Telephone Company of Beaumont, Texas, held an exceptionally successful annual meeting in the new building at Mt. Vernon, O., which has just been completed, on April 24. The new structure has three stories, the lower floor being rented for business purposes, while the second and third floors are occupied exclusively by the telephone company. On the second floor are the quarters of the cashier and bookkeepers, and also the manager's office, the office of the secretary, a private office for consultation and the directors' room. The workshop and the office of the superintendent of construction are located on the rear of this floor. The switchboard and terminal apparatus will be located on the upper floor. It is expected that the apparatus will be installed and all equipment working in the new building by the first of October.

The stockholders heard reports from Secretary Henry C. Devin and Treasurer P. S. Kelser, showing that the company is free from indebtedness and in a highly satisfactory financial condition. Manager E. C. Breece gave detailed figures showing the satisfactory growth in each of the eight exchanges of the company and a reduction in expenses compared with last year by figures on a number of important classes of work. The average gains in different exchanges ranged from approximately ten to twenty-five per cent. in the number of telephones. At the conclusion of the meeting a banquet was held at which the stockholders enjoyed themselves thoroughly. The directors, re-elected for the coming year, are Frank L. Beam, P. S. Kelser, W. P. Bogardus, B. D. Herron, Rev. R. G. McClelland, Henry C. Devin and E. O. Arnold.

TO ENFORCE CONNECTION CONTRACT.

THE Beaumont Telephone Company of Beaumont, Texas, on April 10, asked the district court of that city for a temporary injunction restraining the Southwestern Telephone Company from connecting its lines or interchanging calls with the Southwestern Telegraph & Telephone Company at that point. The court refused to grant the order prayed for and the case will be decided later on its merits. A question of authority as to whether the company is bound by the action of its manager and secretary was raised by the defendant, but the court did not pass on this point, indicating that a jury might be necessary to decide it.

The facts in the case are reported as follows: The Southwestern Telephone Company is a Bell licensee, operating in western Louisiana, having Bell connections with the Cumberland at Lake Charles and Shreveport. Finding that its contract with the Bell was about to expire, it opened negotiations, through its secretary and manager, with the Independent companies at Shreveport, La., and Beaumont, Texas, with the result that contracts were made with both companies for an interchange of business and also an agreement was made with the South Texas Telephone Company for business over its lines to be effective October 1, 1906.

By the terms of the contract with the Beaumont Telephone Company, the Southwestern Telephone Company was to extend its line to Beaumont by that date, but owing to delay in receiving material, the extension was not started until after this time. Then it was discovered that the contract with the Cumberland company would not expire until October 1, 1907. It was also discovered by the Southwestern Company that its contract with the Beaumont Company had not been approved by the president of the company and further effort to connect with the Independent company was abandoned, but it continued with the extension of the line into Beaumont, without a positive statement that the line was to be connected to the Bell system.

PEOPLE ON PACIFIC COAST LEARNING MORE ABOUT INDEPENDENT TELEPHONES.

PORTLAND, Ore., is just now the scene of a whirlwind advertising campaign, which is keeping the people in that vicinity very much interested in telephone development. L. J. Wilde, who has charge of the distribution of the securities of the Home Telephone Company, is showing in a series of newspaper advertisements some of the reasons why Independent companies have been successful in other parts of the country. He has gone further than this, however, and some of his references to the local situation and the competitor of the Home Company, which he designates amusingly as the "Terrific Rates Telephone Company," strike home very keenly.

MEMBERS OF THIRD DISTRICT ILLINOIS ASSOCIATION MEET AT PRINCETON.

PRESIDENT F. M. ASHE, of the Third District of the Illinois Independent Telephone Association, called to order an exceptionally well attended meeting of the members of his district on April 25 in the building of the Bureau County Independent Telephone Company, Princeton, Ill. Among those present at the meeting were C. B. Cheadle, of Joliet, secretary of the State Association and of the Dixon Home Telephone Company; C. A. Camp, of Davenport, secretary of the Henry County Telephone Company; H. H. Bratt and T. W. Miller, of Rock Island; H. E. Pancost, of Mendota; John H. Drawyer, of the Empire Telephone Company of Bradford; John F. Atwater, of Neponset; John Dunne, of Bradford; O. L. Hatch, of Kewanee; C. O. White and S. S. Harriss, of the Bureau County Independent Telephone Company, Princeton; J. W. Ross, of Walnut; C. B. Keigwin, of the Bureau County Company and of the Green River Telephone Company, and W. H. Kugler and Benjamin F. Swab, of the Green River Telephone Company, Harmon.

Secretary Cheadle gave a very interesting talk, outlining the progress of Independent telephone companies in the past year, and referring to the benefits of a more thorough organization which have been so manifest. He particularly urged that everyone connected with the Independent telephone business

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should be present at the State convention, to be held May 14 and 15 at Springfield. At this meeting the question of treatment to be accorded to mutual companies was discussed at some length. Those present were practically agreed that mutual or farmers' companies should be encouraged in every way to build up their own territory as such associations must eventually become feeders for the larger companies operating in the centers of population. Officers were elected for the coming year as follows: President, F. M. Ashe, Kewanee; vice president, John H. Drawyer, Bradford; secretary, W. H. Miller, Rock Island; treasurer, C. O. White, Princeton; executive committee, F. M. Ashe, H. W. Miller, C. O. White, H. C. Barbour, H. H. Bratt, John Dunne and H. E. Pancost.

W. H. Kugler, of the Green River Telephone Company, Harmon, was selected as one of the delegates to the State convention.

MEMBERS OF THE SEVENTH WISCONSIN DISTRICT ASSOCIATION MEET AT LA CROSSE.

IMPORTANT matters of mutual interest regarding rates, territory, etc., were discussed by members of the Seventh District of the Wisconsin Independent Telephone Association when they came together recently at La Crosse, Wis. Among those present at the meeting were ex-Senator John C. Gaveney, of the Trempealeau County Telephone Company; Howard Teasdale, of the Monroe County Telephone Company; George Beyer, of the Westby Telephone Company; Granville Hall, of the Cashton Telephone Company; E. J. Kneen, of the Bangor Telephone Company; W. F. Goodrich and H. M. Rounce, of the La Crosse Telephone Company, and C. H. Schweizer and J. G. Schweizer, of the La Crosse Interurban Telephone Company.

It was found that by carefully considering the matter of apportionment of the new territory in such a session the members could arrive at most beneficial results. There is a certain lack of uniformity in rates in rural service to which the members are now giving their attention, and they hope before long to be able to standardize the service, and then the natural result will be the charging of uniform rates.

IDAHO FARMERS REFUSE TO DEAL WITH BELL COMPANY.

FARMERS in the neighborhood of Kendrick, Idaho, have established a network of lines which thoroughly cover the rural districts. For some time past the Pacific States Telephone Company (Bell) has been making earnest efforts to get the farmers' lines to connect with its system. Many meetings were held, at which the agents of the company tried to persuade the farmers to enter into an agreement for the exchange of service, but features of the Bell contracts which were presented to them apparently did not appeal to the farmers as just or as preserving their interests in their lines, in the construction of which they have gone to considerable expense. The result has been that the Interstate Co-operative Telephone Company, which operates an Independent exchange at Kendrick, has been able to obtain contracts for connection with all these lines, and will give them an outlet to other important cities in that vicinity through a large new switchboard which it has installed to take care of its increased business.

BELL LICENSEE BEING VIGOROUSLY OPPOSED AT ABERDEEN, S. D.

ALTHOUGH its management has persistently endeavored to convey the impression that the Dakota Central Telephone Company is an Independent concern, it has for a long time been well known that it is closely affiliated with Bell interests. It is now bearing the natural consequences of its attitude in the shape of vigorous opposition in the city of Aberdeen. The Groton-Ferney Mutual Telephone Company, with local exchanges at Groton, Ferney, Verdon, James, Warner, Andover, Putney, Bath, Columbia and Mellette, is endeavoring to obtain a franchise to operate in Aberdeen, the county seat, and is meeting with general support from the people of the State. Apparently the city council is inclined to support the Bell licensee company, as considerable pressure was brought to bear upon the matter. The latest action taken was the passing of a resolution by the county commissioners, stating that the Bell telephones would be ordered out of the court house unless the city council should permit the Groton-Ferney Mutual Telephone Company, which has a great many rural subscribers, to build its lines into the city. The situation has not yet been settled, but owing to the advisability of allowing the large number of farmers in the surrounding country to have connection with the city it seems extremely likely that the city council will withdraw its opposition to the Independent company.

GRANTING OF FRANCHISE ENJOINED.

AT Hawes Valley, O. T., Judge Dickerson has issued an injunction restraining the mayor and recorder of Sulphur from putting into effect the franchise recently granted to Edward J. Hines to operate a telephone exchange there. The injunction was issued on the application of the Sulphur Telephone Co., which claims an exclusive franchise under an ordinance of 1900. The city claims that the Arkansas laws, which are still in force in Indian Territory, prohibit exclusive franchises.

BLAKE INSTRUMENTS HANDED OUT TO LOUISIANA BELL SUBSCRIBERS.

IN localities where the Bell companies are forced by competition to keep their service up to a high standard the Blake instrument has been taken out of service for so long a time that its existence has been almost forgotten by the general public. This is not so in a number of places, however. Reports from Crowley, La., indicate that the Bell company is still following the old game of forcing subscribers to pay high rates using "long distance" instruments as the pretext.

The reports state that Manager Thomas of the local exchange of the Cumberland Telephone and Telegraph Company, of Crowley, has been authorized to say that persons desiring local telephones at the rate of $1.50 per month may use only the Blake instruments on a grounded line. If they want long distance telephones with metallic connections they must pay $2.00 per month. Considerable indignation has been aroused by this announcement, and opposition to the attitude of the company is said to be strong.

PROVIDENCE BUSINESS MEN URGE GRANTING OF FRANCHISE TO INDEPENDENT COMPANY.

THOUSANDS of residents of the city of Providence, R. I., have expressed their opinion in favor of the Independent company, but the latest petition to be presented to the committee of the city council, which is considering the matter, is one signed by many of the most prominent business men of the city. This petition sets forth that competition between telephone companies is the best method of bringing the telephone to the normal position it should occupy in the city. The petitioners state that they do not believe that telephone subscribers should be bound by monopoly, or be required to pay, through its excessive rentals, tribute to the American Bell Telephone Company and to continue to pay on a capitalization greater than the business warrants. The names which are on this petition represent some of the most important business interests in the State of Rhode Island.

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THE DEADLY PARALLEL

AUTOMATICS VS. LEVERS

With GRAY PAY STATIONS you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

GRAY TEL. PAY STATION CO.

HARTFORD, CONN.

OUR '07 CATALOGUE SENT ON REQUEST

FOR SALE

For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

SECOND HAND switchboards for sale—2 100 capacity Chicago Telephone Supply Co.; 1 200 capacity and 1 100 capacity Western Telephone Construction; 1 100 capacity Swedish-American; 2 50 capacity and 2 100 capacity Eureka; 1 100 capacity Standard; 3 100 capacity Keystone; 3 200 capacity and 1 100 capacity North. Address Victor Telephone Works, 6583 State St., Chicago, Ill. 817

FOR SALE—Cheap. I. C. S. Telephone Engineering by mail, complete with bound volume. Address Box 829, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 829

WANTED—To sell a country telephone system with 125 miles toll line and two small exchanges in Eastern North Carolina. A good investment, especially for one who wants to locate in the South. Address Box 833, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 833

FOR SALE—500 Eureka express drops with or without cabinet, in good condition, at a bargain. Address New State Telephone Co., Sioux City, Iowa. 838

FOR SALE—Post hole digging, hoisting and cable pulling machine mounted on trucks. Also one No. 6 cube concrete mixer, and other construction apparatus. Above used four months. Address Quincy Home Telephone Co., Quincy, Ill. 839

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WANTED.—Competent man as superintendent, also first class switchboard repair man. Good salary for first class man. None other need apply. Address, Box 821, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 821.

POSITION WANTED—A first class man wants to make change. Would like position as Manager or Wire Chief. Twelve years' experience. A-1 reference. Address, Box 825, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 825

WANTED—Position by good troubleman experienced in line, office, and instrument trouble. In other respects am willing to render myself generally useful. Satisfactory testimonials. Address Box 828, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 828

WANTED---Continued

SITUATION wanted by experienced man as wire chief or switchboard repair man and troubleman for common battery plant. Address Box 830, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 830

POSITION WANTED—An experienced and capable telephone man desires employment as exchange manager, or any responsible plant or maintenance position. Can furnish excellent references. Address Box 831, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 831

WANTED—Operators with experience on multiple board. Will pay $30.00 per month and transportation on six months' contract. Address Peninsular Telephone Co., Tampa, Fla. 832

WANTED—First class magneto troubleman, for town and country work. Right man gets division after trial. State salary expected and reference in first letter. Good opportunity for good man. Address R. C. Cutting, Gen. Mgr., La Grange, Ind. 834

WANTED—Position by married man of 24 as bookkeeper or collector, six years' office experience. Wishes to learn management of exchange. Address Box 65, Jonesboro, Ind. 835

WANTED—Position with telephone company on construction or instrument work. Five years' experience, best of references. Address Box 836, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 836

WANTED—A man to work extra on magneto trouble, help with cable work, also to be capable to work on common battery switchboard and in repair shop Address Box 837, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 837

WANTED—To operate small country switchboard not over 100 line, with living rooms on the premises. 12 years' experience. Address Box 823, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 823

WANTED.—The management of an electric light plant where the business can be built up. Have had experience and can "deliver the goods" on any electric lighting proposition. Open for engagement after July 1, 1907. Address Box 816, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 816

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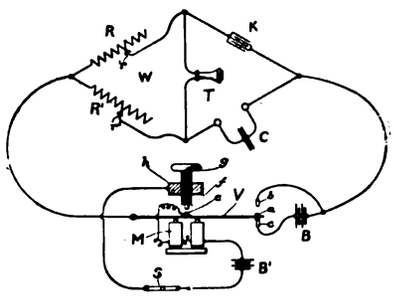
TELEPHONE PATENTS

CAPACITY MEASURING APPARATUS.

Harry Shoemaker, Jersey City, N. J., patents (No. 850,064, dated April 9, 1907; filed October 9, 1906; serial No. 338,100) apparatus for measuring electric capacity.

This invention comprises the arrangement of a Wheatstone bridge in connection with a vibrator, two sets of primary batter-



ies, a known and variable resistance, R and R', a variable condenser of known capacity, K, and the condenser C, of which the capacity is desired.

The closing of the switch S causes an actuation of the vibrator V which charges and discharges the condensers K and C. By moving the variable resistance R and the variable condenser K an electrical balance is secured in the two limbs of the Wheatstone bridge so that no noise is distinguishable in the telephone receiver T. By noting the position of the resistance R and the condenser K the capacity of the condenser C is determined.

TRANSMITTER FACE.

Stephen G. Houghton, Rome, N. Y., patents (No. 851,355, dated April 23, 1907; filed March 7, 1907; serial No. 361,070) and assigns to Wire and Telephone Company of America, Rome, N. Y., a telephone transmitter.

While this patent calls for a telephone transmitter yet nothing is described or claimed aside from the form of construction of the face plate, which is substantially as follows:

A transmitter face plate having an inwardly extending perforated groove and a hole covered by a disk which is held in place by a rib formed by the groove, the disk being slightly convex in shape. No mouthpiece is used with this transmitter face plate. The manner of construction being a means of securing a transmitter in which a minimum of disturbance occasioned by noises other than the speech are experienced; also to prevent the accumulation of dust or dirt in the transmitter proper.

HEAT COILS.

Arthur H. Adams, New York, N. Y., patents (No. 851,051, dated April 23, 1907; filed October 9, 1905; serial No. 281,932) and assigns to Western Electric Co., Chicago, Ill., a heat coil.

This patent covers a form of heat coil of the self-soldering type together with a retaining cap which holds the heat coil in position on the arrester frame.

The coil comprises a metal pin extending through a spool upon which is wound wire of such resistance as to produce heat when an abnormal current traverses it, and a fusible material which holds the pin securely in the spool. The heat in the resistance wire during the passage of excessive current softens this fusible material sufficiently to allow the pin, by virtue of the pressure exerted upon it by a spring in the frame, to slide in the coil sufficiently to impinge against another spring electrically connected with the ground. Together with the heat coil there is described a cap which slides over the coil and by means of which the coil is retained in its proper position on the arrester frame. This cap is engaged with the pressure exerting spring and serves merely for the purpose named. By cooling, the fusible material again solders the pin in the spool, thus making it necessary only to reverse the position of the spool in the cap to again place the line in its normal condition.

RECEIVING DEVICE.

Isidore Kitsee, Philadelphia, Pa., patents (No. 846,414, dated March 5, 1907; filed April 10, 1905; serial No. 254,768) and assigns one-half to William J. Latta, Philadelphia, Pa., a receiving device for electric transmission.

This patent covers an arrangement of an inductorium with taps on the secondary at different points, a switch for completing the circuit between these points and a source of power, a receiving apparatus and air gap adjusters. The object of the whole being the ready reception of currents of small intensity as in wireless transmission of messages.

GROUND CLAMP.

Warren R. Cox, Cleveland, Ohio, patents (No. 846,400, dated March 5, 1907; filed February 19, 1906; serial No. 301,802) and assigns to George R. Blackburn, Cleveland, Ohio, a clamp for ground wire electrical connections.

The inventor describes in this patent a form of clamp for pipes consisting of a metallic strap having a number of perforations along a portion of its length, any one of which may be engaged by a retaining button. This strap is more securely tightened to the pipe by means of a machine screw passing through the strap and a solid piece attached thereto and pressing against the pipe.

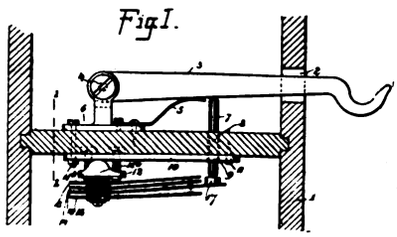
The wire is attached by means of a nut threaded on the machine screw.

SWITCH HOOK.

Alfred Larsson, Buffalo, New York, patents (No. 851,761, dated April 30, 1907; filed May 22, 1906; serial No. 318,148) a telephone switch hook.

This invention relates to a form of switch hook, the particularly commendable feature being the manner of construc-

Fig. 1.



tion which allows of the adjustment of the springs at any angle. The switch springs are mounted together with the insulation on the rocker 18*a*, which allows of tilting the switch to the proper adjustment either forward or backward by the screws 12.

The plunger 7 is of an insulating material and causes the opening or closing of the switch circuits according to the movement of the receiver hook 3.

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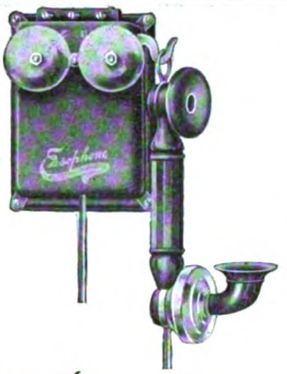
The Subscriber sees that they are Convenient, Efficient and Attractive.



The Exchange Manager sees Lowest Maintenance Cost, Increase in Number of Subscribers, Demand for Hand Telephone.

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The WIRE and TELEPHONE COMPANY of AMERICA

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An Absolute **Proof!**

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Over that of the "dead man" or any other anchor on the market? There is no post hole digger necessary, no ground to be tamped. It is made in one piece and has no moving parts that may open (or may not open).

Two men can screw an anchor in the ground while the other is attaching the guy wire to the pole and putting the thimble through the eye of the anchor, and has his block and tackle ready for the helping hands of the other two men, at the same time they finish boring in the anchor. In 15 minutes they are finished and are off to anchor the next pole.

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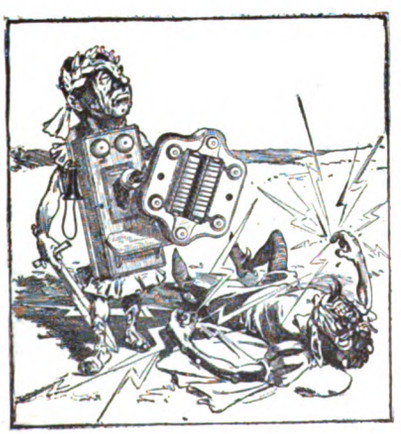

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Our business is to PROTECT.

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Sumter, S. C.

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IN THE MANUFACTURING FIELD

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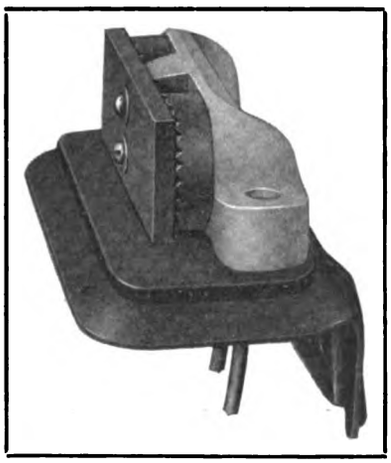
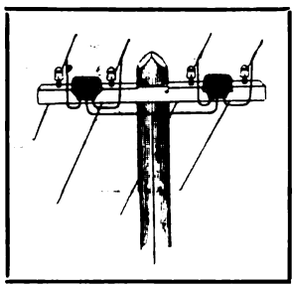


Mechanical Construction Chapman Arrester.

NEW LINE LIGHTNING ARRESTER.

AN arrester for the line is a rather new departure in protective devices, and one well worthy of serious consideration, inasmuch as when a storm is passing over a line it will cause a rise in static potential on a section of the line directly under it, which gradually accumulates until a discharge takes place between the clouds and the line. If no other path to earth is provided, a wet or even a dry pole will serve the purpose, generally resulting in the destruction of one or more poles. This discharge or equalization of potential results in a surge on the line, which manifests itself at the station arresters and equipment.



Chapman Arrester Placed on Cross Arm.

It is the purpose of the Chapman lightning arrester to keep the line discharge below the striking point, as the arrester is so constructed that the air gap offers practically no resistance to the high potential force of the lightning. These line lightning arresters are not intended to displace any of the present forms of station arresters, but rather to relieve them of the brunt of the storm, which they are usually unable to withstand.

The Chapman lightning arrester is so constructed that the air gap is about double that of the ordinary station arrester, and will not clog up under the most severe service, owing to its arrangement and self-cleaning features. It is neatly constructed, mounted upon an iron frame and enclosed in a stamped steel case, which protects it from the weather and other opportunities for damage. The Minnesota Electric Company, 309 Second avenue South, Minneapolis, Minn., manufacturers of this arrester, will be pleased to mail booklet descriptive of their product to any one upon receipt of a request.

S. H. COUCH CO., 156 Purchase street, Boston, Mass., has just issued an exceptionally interesting booklet describing the Couch intercommunicating systems. It is well known that these are based upon the Couch automatic reset switch, a piece of apparatus which is being extensively used in various parts of this country and in Canada. It lends itself readily to various styles of mounting and the company manufactures wall sets of both the box and flush type for use in residences.

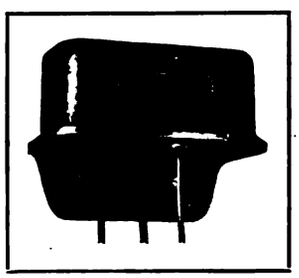
Some of the advantages of the switch itself, the construction of which is shown in illustrations in the booklet, are stated to be that it will not warp because the supporting frame work is entirely of metal rigidly put together, and rubber, although used for insulation, does not enter into the supporting part of the framework; any material that would rust is not used in construction of the switch; sticking of parts is prevented by very accurate machine work so that the buttons are said to have a thorough reliable action. This switch is used for three classes of service, namely, intercommunicating service with trunk to common battery exchange, intercommunicating service with trunk to magneto or automatic exchange, and a third class intended for intercommunicating service with a trunk connecting to a magneto call exchange with provision for cutting over to a common battery central office without any change in the intercommunicating telephones. The use of this switch has in many cases brought to telephone companies considerable additional revenue, and the S. H. Couch Company reports that it is being investigated by a very large number of up-to-date companies.

JULIUS ANDRAE & SONS CO., 99 West Water street, Milwaukee, Wis., is sending out a circular showing the Eclipse Battery Ammeter, which may be readily applied to dry batteries for a quick test without the use of cords and clips. The terminals of the ammeter are so arranged that they may be brought instantly into firm contact with the electrodes of the battery.

Although the price is low, the company states that the instruments are accurate and the adjustment permanent. Telephone men will find it advantageous to learn all about the instrument.

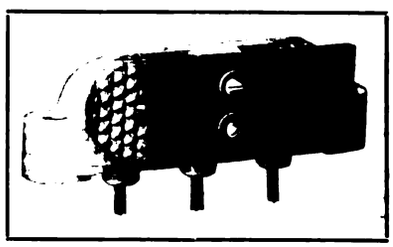
THE FAHNESTOCK ELECTRIC CO., 129 Patchen avenue, Brooklyn, N. Y., has recently issued a folder giving five good reasons why the Fahnestock spring binding posts should be specified on dry batteries and various other pieces of apparatus. Interested persons can find out what these reasons are by writing to the company for its attractive folder.

MIX & GENEST, Berlin, Germany, exhibited a very fine line of telephone apparatus at the Milan Exposition in 1906, for which a grand prize was awarded. Included in this exhibition were systems for local and long distance telephoning, house instruments and specially designed apparatus for railway, army, marine and mining systems, and various other special classes of telephone work. This company issues very attractive catalogues printed in German showing details of a great variety of its telephone apparatus. It also publishes in English a manual on field telephony, which shows a compact type of telephone, with light, specially designed auxiliary apparatus, which is used by the German army in the field.



Weatherproof Containing Case.

THE TRUMBULL ELECTRIC MFG. CO., Plainville, Conn., is just now getting out some especially effective advertising matter. It appeals to the eye in a striking manner, and sets before the reader some statements about the well known Trumbull switches, which ought to appeal to his best judgment. The company will send some of these folders and booklets to those who are interested in obtaining high grade, thoroughly reliable knife switches upon receipt of a request.



Portion of Ground Plate Removed.

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Brief List of Contents

Telephone Instruments, Telephone Lines, Telephone Exchange, Telephone Operation, Automatic Telephone, Wireless Telephony, Magnetism, Measurements, Wiring, Telegraphy, Direct Current Dynamos and Motors, Electric Lighting, Railway Power and Lighting, Arc Lamp Development, Electrical Construction, Management of Dynamos and Motors, Power Station, Alternating Current Machinery, Power Transmission.

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Every duty connected with both the construction and operation of a telephone system thoroughly explained in this great work—nothing omitted. Best work published for managers, linemen, switchboard and trouble-men. Treats fully on the Automatic Telephone and Wireless Telephony. Everything explained in such a way that anyone can master it—a quick and easy short cut to more money and a better position.

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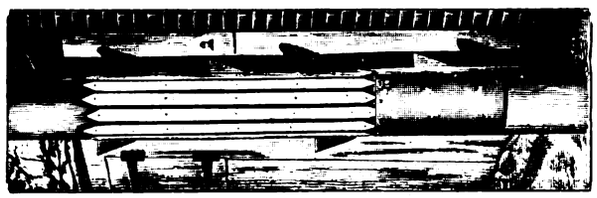
CHICAGO

Butt Guards and Pole Protection Strips



Hallett Butt Guard & Pole Protecting Strip.

Our butt guards are heavy enough to withstand hard knocks, yet elastic enough to admit of being bent into place on any sized pole.

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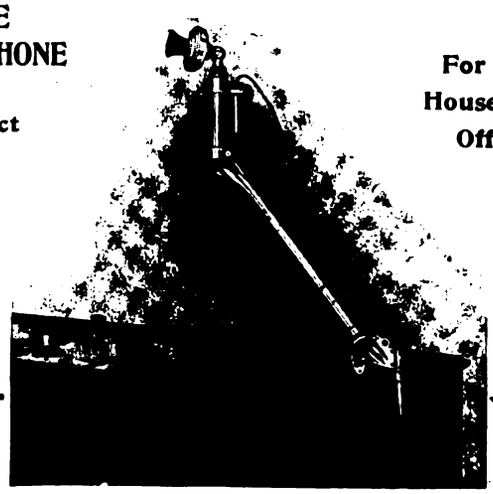

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THE WEEK'S MESSAGES

NEW COMPANIES.

STEPHENS, ARK.—An Independent telephone company has been organized and a line constructed between Stephens and Woodlawn. Among those interested in the company are J. M. Hodge, R. W. Arrington, J. P. Robertson, J. W. Starritt, Sam Taylor, G. A. Simpson, C. B. White and J. H. Rogers.

COLORADO CITY, COL.—An Independent telephone company has been organized by several leading citizens of this city, which has back of it, it is understood, New York capital. Among those actively interested in the enterprise is F. J. Pickens, who some time ago, after securing the property of the El Paso Telephone Company, formed the Home Telephone Company, and has since been running it under the franchise of the El Paso Company. It is the intention of the new company to apply for a twenty-year franchise, and if it is granted construction of the new system will be commenced at once. The general offices are to be located at Colorado City, and the company will operate in competition with the Colorado Bell Company.

CUNNINGHAM, KY.—The East Cunningham Telephone Company has been incorporated with a capital stock of $1,050. The incorporators of the new company are D. B. Elsey, W. J. Beard and T. W. Burrow, and it is its intention to construct a line from Cunningham to Bardwell.

OWOSSO, MICH.—The Conway-Antrim Telephone Company has been incorporated with a capital stock of $1,000, and lines will be built to Fowlerville, Byron, Morrice and Shaftsburg.

EFFINGTON, MINN.—Articles of incorporation have been filed by the Effington Telephone Company. The company is composed of farmers, who contemplate the establishment of a telephone system in the town of Effington and vicinity. It is capitalized at $5,000, with the privilege of increasing to $50,000. The officers of the company are Thomas Koep, president; John Hardekopf, vice president; Geo. J. Kraemer, secretary and treasurer.

SAUK CENTRE, MINN.—An Independent telephone company, whose object is to build lines from Sauk Centre through Getty to Brooten, has been organized in this city.

UNION, MO.—The Commercial Telephone Company, of Union, with a capital stock of $8,000, has been incorporated by A. J. Gorg, A. E. Reinhard, A. H. Mauthe, A. Kramolowsky and O. E. Meyersieck.

AURORA, NEB.—The Farmers' Telephone Company, of Aurora, has filed articles of incorporation. It has an authorized capital stock of $10,000, of which $2,500 has been paid up. Among the incorporators are John George, H. F. Jansen, O. B. Rush, D. H. Wilkins, J. P. Huebert and William Hagemeister.

DENTON, NEB.—The Kramer-Denton Company has been incorporated with a capital stock of $25,000. The incorporators are B. G. Miller, S. A. Hensley, C. F. Miller, William J. Miller and F. C. Miller.

ELYRIA, O.—The Lorain County Home Telephone Company, whose intention it is to operate in Lorain, Medina, Cuyahoga and Erie counties, has filed articles of incorporation. The capital stock of the company is placed at $750,000, and Elyria is named as the headquarters. It is understood that the new company is a merger of a number of companies operating in Lorain county.

NAPOLEON, O.—The Henry County Mutual Telephone Company has been incorporated by David Horman and others.

GUTHRIE, OKLA.—A farmers' telephone company is being organized and will shortly be incorporated. It is to be known as the Guthrie, Iron Mound & Cedar Townships Telephone Company, and it is its intention to construct and operate lines between the points mentioned. J. P. Thomas, who has been named as vice president, and J. L. Christy are among those interested.

ROSCOE, PA.—The Roscoe Telephone Company, with a capital stock of $5,000, has been incorporated, and the following directors named: B. L. Lamb, W. C. Smith, T. J. Underwood, California; J. H. Underwood, Roscoe.

PRINGLE, S. D.—An Independent telephone company, to be known as the Point of Rocks Telephone Company, has been organized by the people of Pringle. It is the intention of the new company to build lines into Custer and Hot Springs, and the following officers have been elected: J. W. McClaren, president; R. J. Turner, secretary.

PUKWANA, S. D.—The Pukwana Telephone & Electric Company has recently been organized, and work will be commenced on its system at an early date.

ACTON, TEXAS.—The Acton Telephone Company, of Acton, has been incorporated with a capital stock of $8,125.

GREEN RIVER, UTAH.—An Independent telephone company has been organized and the following officers elected: Frank Cook, president; R. M. Eldred, Ervin J. Cook, vice presidents; R. M. Eldred, treasurer; F. A. Beaumont, secretary; G. P. Schlosser, general manager. It is proposed by the new company to erect its own exchange building and install a strictly up-to-date plant.

MANTI, UTAH.—An Independent telephone company, to be known as the Manti Telephone Company, is being organized at Manti, and $4,000 has already been subscribed. The Manti company will establish a local line for the city, with the latest improved apparatus. The organization of this copmany has been brought about by the desire of the citizens to discard Bell telephones and establish a strictly Independent system.

APPOMATTOX, VA.—The Appomattox Telephone Company has been incorporated with a capital stock of $5,000, maximum; $1,000, minimum. The incorporators are H. D. Flood, S. L. Ferguson, J. R. Horsley, J. R. Atwood, B. F. Oden, all of Appomattox.

YUBA, WIS.—Articles of incorporation have been filed by the Pine River Telephone Company, of Yuba. It has an authorized capital stock of $1,500, and the incorporators are M. B. Lewis, John Fonta, B. K. Borland and others.

CORNWALL, ONT., CAN.—A new telephone company has been formed at this city to be known as the Glengarry Telephone Company, with Donald McCaskill, of Laggan, as president.

FRANCHISES.

LA PORTE CITY, IA.—Application for a franchise at La Porte City has been made by the La Porte City Farmers' Mutual Telephone Company.

ELKINS, W. VA.—The Citizens' United Telephone Company is to make application for a franchise to build and maintain telephone lines over the roads of Randolph county.

ELECTIONS.

YELLVILLE, ARK.—The following officers and directors have been elected by the Yellville Telephone Company: W. R. Jones, president; L. Weast, secretary and treasurer; S. Brooksher, R. L. Berry, W. R. Jones, M. Weast and W. S. Chastain, directors.

SAN FRANCISCO, CAL.—The directors of the Direct Line Telephone Company are Julius Frick, A. Koch Andriano, William T. Hess, Julius Fay and Charles E. Wiggin.

YAMPA, COL.—The new officers of the Elk Mountain Mutual Telephone Company are: President, F. S. Follett; general manager, B. L. Allie; exchange manager, A. G. Maasdam.

HUNTER, N. Y.—The folowing officers have been elected by the Schoharie Valley Telephone Company: President, John Sickles; vice president, N. Wesley Ploss; secretary, Geo. W. Dunham; treasurer, Frank C. Carr; trustees, John Gripman, Elmer Ploss and Frank Lord.

NEW BEDFORD, O.—The following directors and officers have been named by the New Bedford Telephone Company: W. W. Brownlee, president; E. A. Tobey, secretary; directors, J. A. Brown, J. W. Gealey, E. A. Tobey, John White, W. S. Lowry, W. W. Brownlee and Chas. Terrill.

NEW RIEGEL, O.—The permanent officers of the New Riegel Telephone Company are J. N. Theis, president; J. A. Theis, vice president; Dr. B. R. Miller, secretary; Stephen Peiffer, treasurer; Jos. Wetzel, L. J. Huss, I. Lenhart, directors.

CRESCO, PA.—At the annual meeting of the Cresco & Greentown Telephone Company the following officers were elected: Lafayette Price, president; M. A. Price, secretary; Foster Mikels, financial secretary; H. E. Heller, treasurer; Geo. Crane and James Beesecker, auditors.

BRENHAM, TEXAS.—The following officers and directors have been elected by the Brenham & Shelby Telephone Company: E. R. Knolle, president; T. A. Low, vice president; Joe Mikeska, secretary and treasurer.

WANTED – SPECIAL CORRESPONDENTS

OWING to the rapid growth of the Independent telephone movement in all sections of the country, we have openings for special correspondents in every State to work in conjunction with our already efficient corps. Matter similar to that in our Message and Operating Field pages is especially desired. For details address the Editor.

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SUCCESSOR TO

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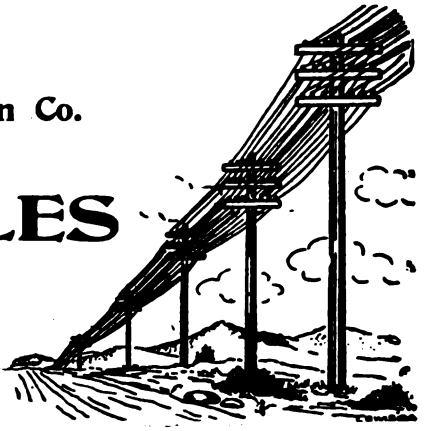
Yards from
Maine to Washington



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KELLOGG SWITCHBOARD & SUPPLY CO.

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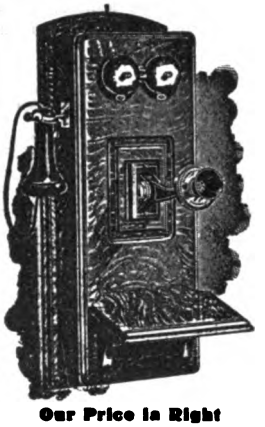

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and with no exposed metal parts in the circuit to

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Directors: L. F. Harris, Ben Schmid, Joe Mikeska, T. A. Low, E. R. Knolle.

RICE LAKE, WIS.—The Barron County Telephone Company has elected the following directors: De Witt Post, T. W. Borum, J. E. Horsman, C. J. Borum.

MISCELLANEOUS.

RED OAK, IA.—The Montgomery County Telephone Company has been reorganized. The new officers are H. E. Deemer, of Red Oak, president; H. N. Havener, Marengo, vice president; H. S. Rogers, Red Oak, treasurer; F. M. Chandler, secretary and manager. The capital stock of the company is $50,000, of which $41,800 has been issued.

INDUSTRY, ILL.—The incorporators of the newly organized Industry Telephone Company are R. F. Butterfield, J. P. Young and Fred Rexroat, and the capital stock is given at $6,000.

BALTIMORE, MD.—The incorporation of the Maryland Telephone Company by Messrs. W. T. Spring, R. F. Bonsall, W. H. Martin, E. P. Hill and A. Y. Pindell, with a capital stock of $1,000,000, it is understood is for the purpose of consolidating the Maryland Telephone and Telegraph and Baltimore Electric Power companies under the name of the Baltimore Electric Power Company.

GRAPELAND, TEXAS.—The local telephone system at Grapeland, Texas, formerly owned by Dr. McCarthy, has become the property of Mr. Cook, of Crockett.

SAN ANGELO, TEXAS.—The Dixie Telephone Company, owned by Dr. Bascom Lynn, of San Angelo, and Norman K. Weaver, of Sweetwater, has sold its Bronte-Sweetwater line and exchanges at Bronte, James and Fort Chadbourne for $9,500 to Messrs. Jerry and Jack Rust, owners of the San Angelo Telephone Exchange.

LEWISBURG, WEST VA.—The Greenbrier & Organ Cave Telephone Company, Greenbrier, formerly owned by M. A. Gates, has been acquired by H. L. Van Sickler, John Laing, James Laing, R. L. Telford, K. M. Snyder, A. M. Bell and others of Lewisburg. It is the intention of the new owners to improve the plant.

SHOAL LAKE, MAN., CAN.—The telephone system formerly owned by Messrs. Randall & Greenshaw, which runs from Shoal Lake to Kelloe, and which serves Solsgirth, Lone Tree and Rossburn, has become the property of W. J. W. Bolton.

New Construction in the Field

CONSTRUCTION.

CAIRO, ILL.—The Home Telephone Company expects to make many improvements in its system in this city.

MT. MORRIS, ILL.—New lines are being strung by the Ogle County Telephone Company to take care of its increasing business.

CARMEL, IND.—A new switchboard is to be installed by the Carmel Telephone Company, and its service further improved by the building of a new line to Westfield.

COLUMBIA CITY, IND.—The lines of the Farmers' Mutual Telephone Company are being extended.

PERU, IND.—Connection is soon to be established with Indianapolis by the Peru Home Telephone Company. Pay stations are to be installed at Miami and Bennett's Switch, and thousands of dollars worth of new cable put up in the city of Peru.

RICHMOND, IND.—A sub-station is to be erected by the Home Telephone Company in this city.

WEST BADEN, IND.—The Mathews & Ham Telephone Company is improving its system.

BIDWELL, IA.—It is the intention of the Bidwell Telephone Company to connect the Bidwell line with the Ottumwa Telephone Company's lines at South Ottumwa.

COUNCIL BLUFFS, IA.—The switchboard of the Independent Telephone Company has been enlarged to take care of its increased business. In addition to this, new toll lines are to be constructed in Iowa, and a new station installed at Underwood.

ELLIOT, IA.—Among the improvements planned by the Elliot Central Telephone Company are the installation of a new switchboard, and the construction of new lines.

WEBSTER, IA.—New lines are being erected by the Martin Telephone Company, and its system otherwise improved.

BURLINGTON, KAS.—A new switchboard is to be installed by the Burlington Telephone Company, and new lines built to Lamont, Hill Top and other points.

GROVE CITY, MINN.—A number of extensions are planned by the Grove City & Rosendale Telephone Company, and work will be commenced at an early date.

KASOTA, MINN.—The Nicollet County Telephone Company is extending its lines from Kasota to Lake Washington, and contemplates the erection of many miles of new system during the present year.

MANKATO, MINN.—It is the intention of the Citizens' Telephone Company of this city to construct a new line from Minneopa to Judson.

HELENA, MONT.—Work on the construction of its new exchange building will shortly be commenced by the Montana Independent Telephone Company, of Butte.

WARREN, N. H.—The Baker's River Telephone Company is reconstructing part of its plant, and expects to make it strictly up to date in every particular.

WEST POINT, NEB.—The Cuming County Telephone Company, which some time ago secured a franchise in this city, expects to extend its line so as to give service to residents of the county seat.

BYRON, N. Y.—It is the intention of the Byron Telephone Company to commence the extension of its lines very soon.

CENTER BRUNSWICK, N. Y.—The lines of the Commercial Telephone Company are to be extended north of the city.

HUNTER, N. Y.—Among the extensions planned by the Scoharie Valley Telephone Company is a line to Phoenecia, where connections will be made with the Citizens' Standard Telephone Co.

LEONARDSVILLE, N. Y.—The Leonardsville Telephone Company is extending its system from this city to Bridgewater.

HENDERSON, N. C.—The system of the Home Telephone & Telegraph Company is to be entirely rebuilt, and the company expects to make its plant one of the most complete in the state.

JAMESTOWN, N. D.—It is the intention of the North Dakota Independent Telephone Company to build a long distance line from Jamestown to Melville, passing through Pingree.

DOYLESTOWN, O.—The system of the Doylestown Telephone Company is being extended in this city, and lines are to be erected southeast and west of the town.

NEW RIEGEL, O.—It is the intention of the New Riegel Telephone Company, which is now at work on its plant in this city, to establish connections with the exchanges at Bascom and Alvada, and with the Home Telephone Company at Tiffin.

WAMEGO, O.—Extensive improvements in its plant are contemplated by the Wamego Telephone Company, among which is the installation of a new switchboard.

LOOMIS, S. D.—The Schuler-McCurdy Telephone Company has commenced the installation of its system in Loomis.

BEEVILLE, TEXAS.—A telephone line from Beeville to Oakville is to be erected by G. W. West.

CLARESHOLM, ALB., CAN.—The Calgary Telephone Company, Calgary, Alb., Can., has decided to install a telephone system in this city.

KASLO, B. C., CAN.—Arrangements have been practically completed by the Kaslo & Slocan R. R. to build a long distance telephone system along the route of the railway, with branches to connect with the most important mines in the districts touched. All telegraph instruments are to be removed, and the railroad operated by telephone.

MINNEDOSA, MAN., CAN.—The municipalities of Odanah, Minto and Clan William, immediately adjacent to this town, are to install municipal telephone systems. Address Reeve Christopherson, of Clan William, Clan William P. O., Manitoba; Reeve Sparling, of Odanah, Minnedosa, Manitoba, and Reeve Cameron, of Minto, Minto P. O., Man., Can.

TORONTO, ONT., CAN.—Standard specifications are being prepared by the provincial government and will be given out to Ontario municipalities as required. The idea is to have uniform systems throughout the province. Address J. J. Foy, minister of works.

WOODSLEE, ONT., CAN.—The municipality of North Essex has decided to install a rural telephone system. Address M. N. Mosseau.

SWIFT CURRENT, SASK., CAN.—The board of trade has appointed a committee to look into the financial arrangements necessary for building a municipal telephone system. Address J. G. Maxwell.

WARMAN, SASK., CAN.—The council has decided to build a municipal telephone system this summer. Address the Mayor.

UNDERGROUND.

SOUTH HAVEN, MICH.—The Kibbie Telephone Company is placing some of its wires underground in this city.

HELENA, MONT.—Considerable conduit work is to be done by the Montana Independent Telephone Company, of Butte, in this city.

POTTSTOWN, PA.—The Bell company has applied for privilege to place its wires underground in Pottstown.

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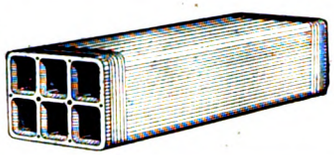

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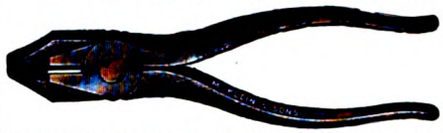
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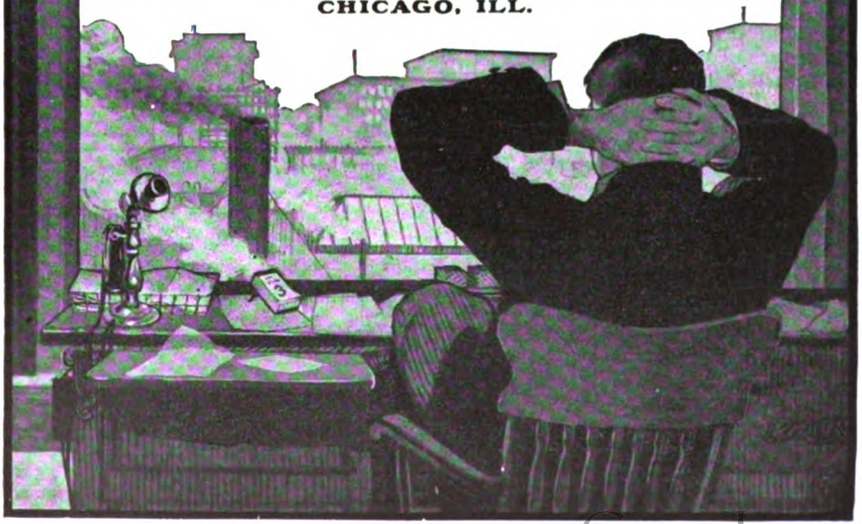

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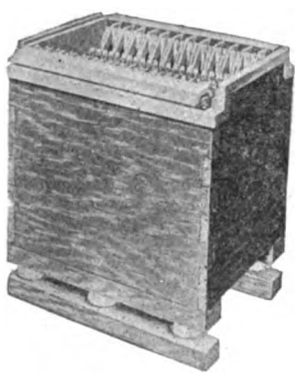

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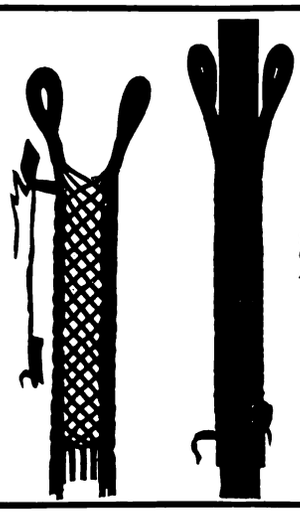

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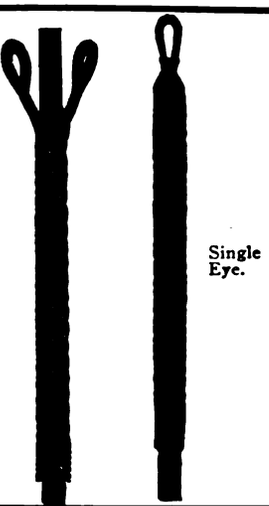

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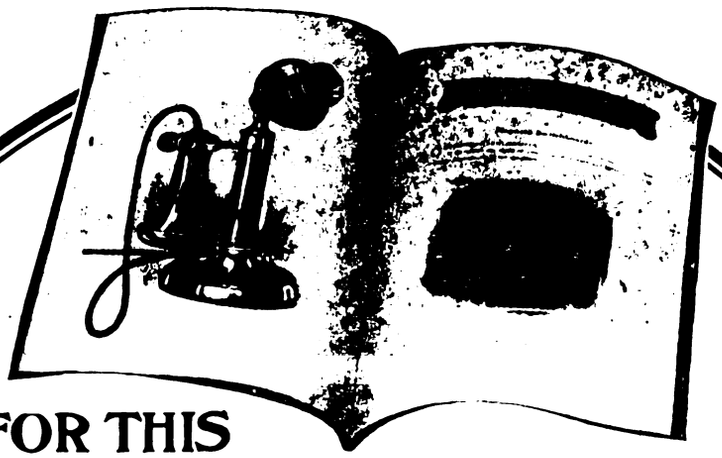

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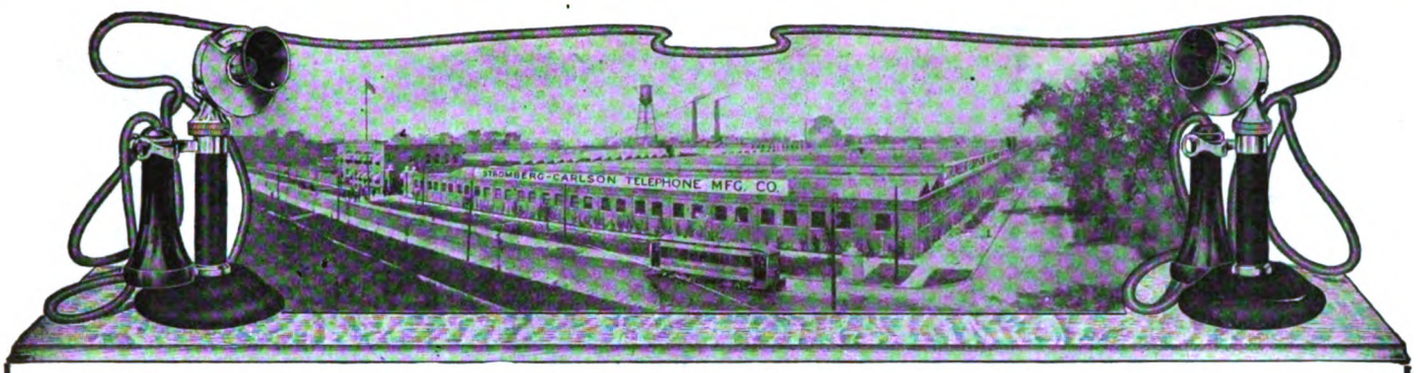

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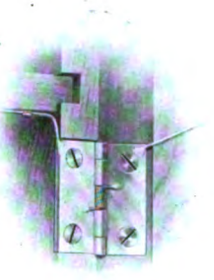

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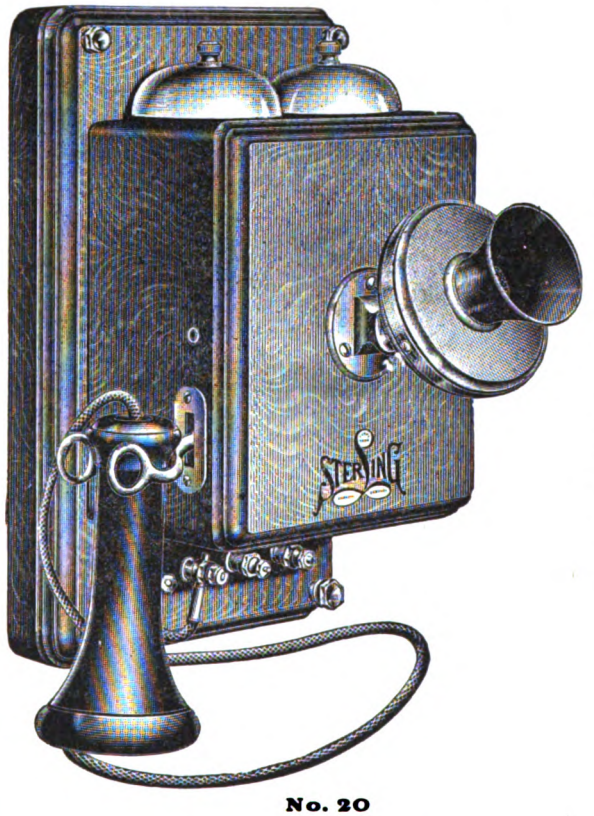

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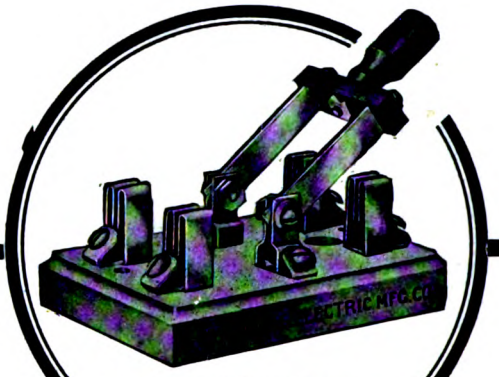

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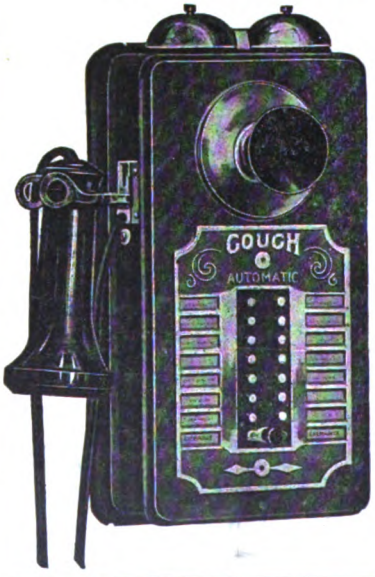

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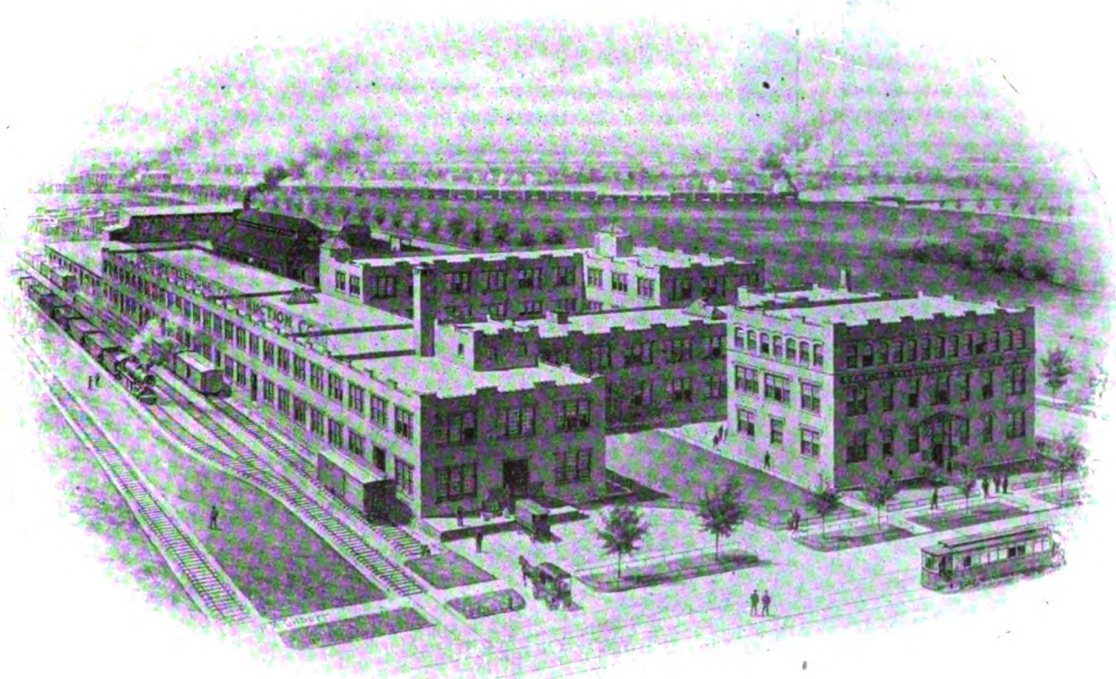

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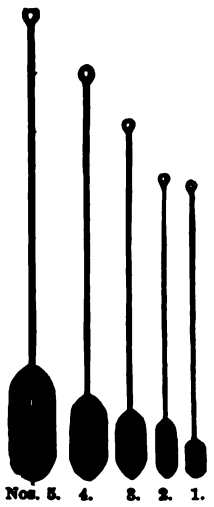

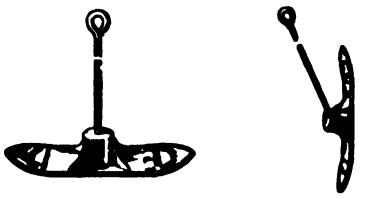

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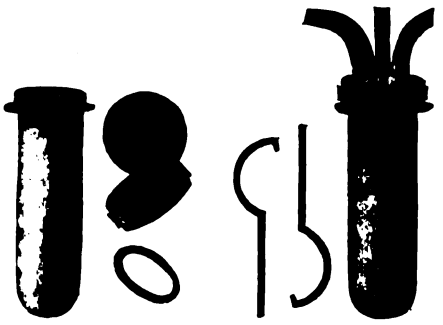

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American Conduit Co.	36	Livermore Pay Station Co.	32
American Electric Fuse Co.	1	Long Distance Telephone Mfg. Co.	1
American Electric Teleph. Co.	40	McMeen & Miller	36
American School of Corres.	34, 36	Matthews & Bros., W. N.	9 and 32
Andrae, Julius, & Sons Co.	—	Meredith Cedar Co., J. P.	38
Andrews Co., A. H.	—	Minnesota Elec. Co.	12
Automatic Electric Co.	11	Mountain State Electrical Co.	10
Baker & Co.	1	Mullin, C. J.	3
Beidler, Francis & Co.	38	Nagel, W. G., Electric Co.	9
Belden Mfg. Co.	—	National India Rubber Co.	1
Bissell Co., F.	10, 35, 36, 38	National Pole Co.	37
Blake Signal & Mfg. Co.	—	National Telephone Supply Co.	35
Blakeslee Forging Co.	—	Nungesser Electric Battery Co.	—
Calculagraph Co.	12	Okonite Co.	31
Carbolineum Wood Preserving Co.	37	Oliver Mfg. Co.	—
Central Tel. & Elec. Co.	—	Osborne & Son, M. P.	38
Century Telephone Const. Co.	7	Pendleton & Gilkey	36
Christensen Co., H. B.	32	Pignolet, L. M.	10
Collyer Insulated Wire Co.	1	Plume & Atwood Mfg. Co.	1
Commercial Elec. Supply Co.	12	Porter Cedar Co.	38
Cook, Frank B.	11	Premier Electric Co.	2
Couch Co., S. H.	6	Rochester Sewer Pipe Co.	36
Crescent Lumber Co.	38	Roebling's, John A., Sons Co.	10
Crumb, W. H., & Co.	36	Schwarze Elec. Co.	10
Dean Electric Co.	4	Senseman Lumber Co., J. M.	38
Doubleday-Hill Elec. Co.	—	Simplex Electrical Co.	1
Edwards-Hine Co.	35	Standard Underground Cable Co.	12
Ericsson Tel. Mfg. Co., L. M.	33	Sterling Electric Co.	6
Farwell & Son, J. B.	38	Sterling, W. C., & Son	38
Ferguson Lumber Co.	38	Stromberg-Carlson Tel. Mfg. Co.	5
Fibre Conduit Co.	34	Sumter Teleph. Mfg. Co.	—
Ft. Wayne Elec. Works	34	Telephone Printing Co.	36
Frankel Display Fix. Co.	—	Trumbull Electric Mfg. Co.	6
General Electric Co.	36	U. S. Coin Register Co.	9
General Storage Battery Co.	36	Universal Cable Grip Co.	34
Gest, G. M.	39	Valentine Clark Co.	38
Gould Storage Battery Co.	3	Vote Berger Co.	35
Gray Telephone Pay Station Co.	31	Wanted, Situations, Etc.	31
Hallett Iron Works	—	Waterbury Company	1
Hemingray Glass Co.	35	Wesco Supply Co.	3
Indiana Rubber & Insulated Wire Co.	1	Weston Electrical Instrument Co.	36
International Teleph. Mfg. Co.	37	Wire & Telephone Co. of America	32
Kellogg Switchboard & Supply Co.	8 and 37	Yonkers Specialty Co.	1
Klein, Mathias, & Sons	36		
Lanz., M., & Sons	38		
Leeds & Northrup Co.	2		
Lindsley Bros. Co.	38		

U. S. COMBINED

Cash Register and Pay Station

[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE

United States Coin Register Co.

TOLEDO, OHIO

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West Texas Telephone Co.

OFFICE OF

Secretary and Treasurer,

J. A. WALKER, President.
H. T. WILLIAMS, Vice Pres.
C. H. WOODWARD, Sec'y and Treas.

Exchanges { BROWNWOOD, BALLINGER, COLEMAN, GOLDTHWAITE

Brownwood, Texas, April 12th, 1907.

Mountain State Electric Co.
Wheeling, W. Va.

Gentlemen:

We enclose our draft for $24.00 to cover Inv. 10-31-'06. It was some time before we could get telephones wired for this lock-out, and then it was some time before we could get our man to put them in, and then we have taken time to test them out to our satisfaction, therefore time has passed. We are now fully satisfied, and they come fully up to all that is claimed for them, now we want to try more.

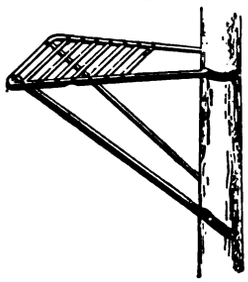
You may send us by Wells-Fargo Express Co. 25-Poole Lock-out.

With Kellogg, Dean or any other good four-party selective ringing apparatus will make it complete and solve the *Party Line* problem.

Our business this season has been exceedingly heavy, and we have been forced to let some things suffer for want of attention.

Yours truly,
WEST TEXAS TELEPHONE CO.
By C. H. Woodward, Sec. & Treas.

Security Pole Seats ARE Secure



And more than that--they're neat in appearance--cost very little--and never break, split, crack or warp.

The Security is very light--can be easily, instantly installed--and we repeat--it costs very little.

You should write for the Security Book. It gives prices and particulars.

TOLEDO, OHIO · THE F. BISSELL COMPANY

THE F. BISSELL COMPANY, TOLEDO, O.
226-230 Huron Street

Magneto Loud Ringing Extension Telephone Bells

Gongs 6-inch to 10-inch

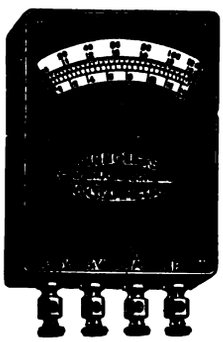
All Resistances — All Weatherproof

Efficiency, Durability and Price will interest you.

Schwarze Electric Co., Main Office & Factory, Adrian, Mich.

Branches { Chicago, 324 Dearborn St. St. Louis, Mo., 708 Victoria Bldg. Pittsburg, Renshaw Bldg. San Francisco, 903 Atlas Bldg.

LOOKING FOR TROUBLE?



Suppose you have a line in trouble—grounded or open. You don't know the exact location, but you send out a troubleman to hunt it up and clear it. It may take him an hour or a day. Meanwhile the subscriber is getting hot under the collar and saying things about telephones in general and yours in particular.

If you have a Pignolet voltmeter or volt-ammeter you can determine the approximate location and also get an idea of the nature of the trouble. With the information your troubleman can find the fault in jig time, and you will have prevented the subscriber kicking by giving him service at the earliest possible moment.

Does it pay to be informed? You ought to know.

LOUIS M. PIGNOLET, Originator of the Voltmeter Habit
78 CORTLANDT ST., N. Y.

Do you want the best wire to be obtained for Telephone Service?

Use Roebling Hard Drawn Copper Wire

Do you want a cheaper wire which will last for years and give good service on lines of ordinary length?

Use Roebling Double Galvanized Telephone Wire

John A. Roebling's Sons Co., Trenton, N. J.

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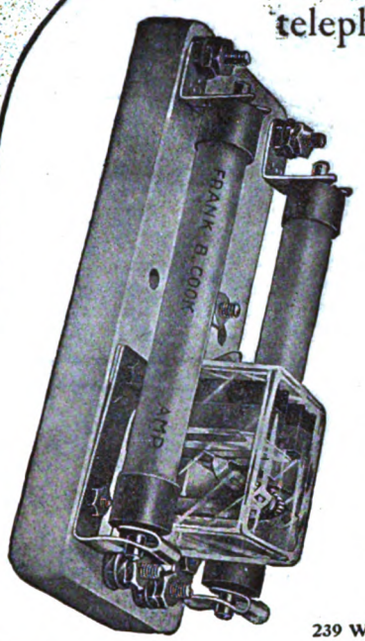
A Broken Wire

of a power or lighting circuit may cross your telephone circuit.

It cannot do any harm if you have installed

COOK'S SUBSCRIBERS' STATION PROTECTORS



They absolutely prevent accidents to your subscribers or instruments from this cause or from lightning storms.

Frank B. Cook. Inc.

239 West Lake Street Chicago, U. S. A.

THE WHOLE SECRET

of the success of the AUTOMATIC TELEPHONE SYSTEM lies in the elimination of the girl operators. It cannot be denied that most of the troubles and much of the expense in the manual system (where operators are used) can be charged to the operators themselves.

TRUE ENOUGH,

all operators are not faulty all the time, but some of them are at all times and all of them are sometimes. But "a chain is no stronger than its weakest link," and the average telephone subscriber judges the entire service by the poorest he has received.

IN THE AUTOMATIC TELEPHONE SYSTEM

the fallible human operator has been displaced by an infallible machine, a machine that produces perfect telephone service. With the human operator disappear her faults and her expense. The former are many, the latter not inconsiderable.

THAT IS WHY

the AUTOMATIC TELEPHONE SYSTEM, having no operators, can produce a perfect telephone service, prompt, accurate, absolutely secret, at a much lower cost than for inferior manual service. That is why it is a profitable investment to put your money into an operating company that uses the Automatic Telephone System. Our Automatic Telephone System has been adopted in the following cities:

Aberdeen, S. D.
Akron, Ohio.
Allentown, Pa.
Auburn, Me.
Auburn, N. Y.
Battle Creek, Mich.
Beaver Falls, Pa.
Bellingham, Wash.
Butte, Mont.
Cadillac, Mich.
Champaign, Ill.
Chicago, Ill.
Cleburne, Texas.
Columbus, Ga.
Columbus, Ohio.
Dayton, Ohio.
Denver, Colo.
El Paso, Texas.
Emaus, Pa.
Fall River, Mass.
Grand Rapids, Mich.
Hastings, Neb.
Havana, Cuba.
Hazleton, Pa.
Holland, Mich.
Hopkinsville, Ky.
Jonesboro, Ark.
Lake Benton, Minn.
Lewiston, Me.
Lincoln, Neb.
Los Angeles, Cal.
Manchester, Iowa.
Marianao, Cuba.
Marion, Ind.
Medford, Wis.
Miamisburg, Ohio.
Mt. Olive, Ill.
New Bedford, Mass.
Oakland, Cal.
Ocean Park, Cal.
Omaha, Neb.
Pentwater, Mich.
Portland, Me.
Portland, Ore.
Princeton, N. J.
Richmond, Ind.
Riverside, Cal.
Rochester, Pa.
Rushville, Ind.
San Diego, Cal.
San Francisco, Cal.
Santa Monica, Cal.
Saskatoon, Sask., Can.
Sioux City, Iowa.
South Bend, Ind.
Spokane, Wash.
Springfield, Mo.
St. Marys, Ohio.
Tacoma, Wash.
Toronto Junction, Can.
Traverse City, Mich.
Urbana, Illinois.
Van Wert, Ohio.
Walla Walla, Wash.
Wausau, Wis.
Westerly, R. I.
Wilmington, Del.
Woodstock, N. B., Can.

AUTOMATIC ELECTRIC COMPANY

VAN BUREN AND MORGAN STS. CHICAGO, U. S. A.

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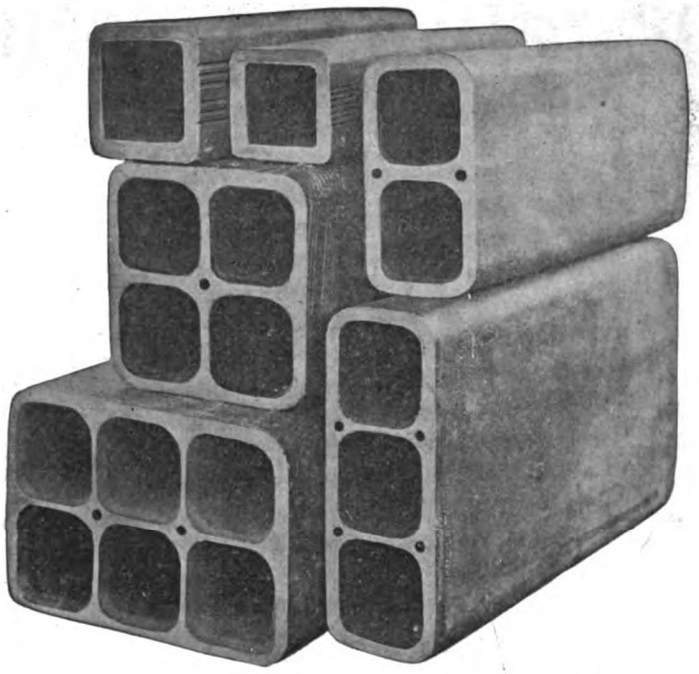
COMMERCIAL

WAY DOWN ROCK-BOTTOM

PRICES

ON

VITRIFIED CLAY CONDUIT



We would like to tell you about it—write us. Cable Specialties and Cable Splicing Tools.

Commercial Electrical Supply Co.

15th STREET, ST. LOUIS, MO.

COMMERCIAL

Watching the Clock

Pencil and paper in one hand, plugs for connections in the other, and her mind intent on other calls, the operator cannot be expected to correctly time toll messages.

THE CALCULAGRAPH

Relieves the operator of all worries on this score. It registers the time the call commences, and *automatically computes the elapsed time* of the conversation. Thus payment for all "excess" time is assured. It makes no clerical errors.

CALCULAGRAPH COMPANY

1437 JEWELERS' BUILDING, NEW YORK CITY

Agents for Canada: Northern Electric and Manufacturing Co., Ltd., Montreal.

EATS 'EM ALIVE.

No mollycoddle about the *Chapman Lightning Arrester* for Telephone and Telegraph Lines. Explanatory booklet sent free.

H. E. Cobb, Selling Agent,
1501 Monadnock Bldg., Chicago, Ill.

Manufactured by MINNESOTA ELECTRIC CO.,
Minneapolis, Minnesota.

Telephone Wire and Cables

BARE COPPER LINE WIRE

Weatherproof and Rubber Insulated Wire and Cables

Aerial—Underground—Submarine Lead Covered Cables

TERMINALS—STEEL STRAND—HANGERS

Standard Underground Cable Company

PITTSBURGH, PA.

Boston. New York. Philadelphia Atlanta, Ga. Chicago. St. Louis. Oakland, Cal. Los Angeles, Cal. Seattle, Wash.

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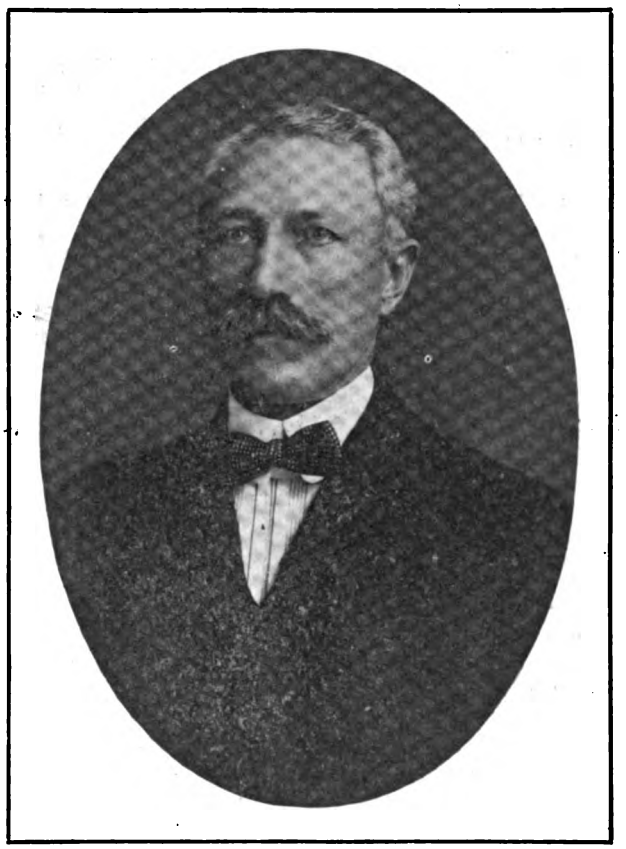
VOLUME XV. *SATURDAY MAY 25, 1907.* *NUMBER 21.*

The Indiana Telephone Convention

By R. D. FISHER.

WITH an attendance of 308 all told, 268 of whom were delegates, and the most elaborate and pretentious exhibit and display of modern telephone and electric apparatus by the manufacturers and supply houses ever shown in the State, the second annual convention of the Indiana Independent Association was called to order May 15 by President A. C. Lindemuth, of Richmond. After calling the roll of district representatives President Lindemuth introduced Mayor Charles A. Bookwalter, who welcomed the telephone men to the city in a very felicitous manner. He said it was scarcely necessary to assure telephone men of his pleasure at their presence in a city to whose greatness they contributed so largely. He said telephones are no longer a luxury but a genuine necessity and few people stop to realize how much the community owes to the enterprising telephone men or with what rapidity the telephone development has come upon the people. President Lindemuth responded to the welcome of Mayor Bookwalter in a few well chosen words.



A. C. Lindemuth, Reelected President of the Indiana Independent Telephone Association.

Mr. E. M. Popp, of Fort Wayne, was made principal secretary of the convention.

President Lindemuth presented his annual address and was listened to with marked attention. He said "he congratulated the association on the unusually large representation present. These meetings are not only instructive and beneficial from a financial standpoint, but they make us broader and better business men. They extend our acquaintance, enlarge our experience and develop the social qualities among men engaged in the same line of work." He referred to the telephone business as a strenuous calling which has many daily worries and difficulties which call for all the Beatitudes and Christian graces combined. Nothing short of the temperament of an angel, the patience of Job and the genius of an Edison are adequate to carry one through a day's telephone experience with entire satisfaction to himself or the public. Mr. Lindemuth spoke of the elaborate exhibits as a feature of the convention not only commendable for the enterprise shown by the exhibitors, but as a means of giving valuable education to the visitors. Their importance is fully appreciated because they afford the opportunity to see the most up-to-date and most improved apparatus and equipments without trouble and expense.

The record for the year was referred to as follows: "The progress of the Independent telephone interests in Indiana has been both steady and important. There has been an onward march in solid phalanx toward the firmer and more complete occupation of the telephone field of the State. Many new companies have organized, new plants have been established and many of the older companies have erected substantial and well equipped buildings, installed many miles of underground cables, and re-equipped their central offices with the latest and most improved apparatus. Other companies are preparing to make similar improvements, while almost every Independent company in the State has extended its territory, rebuilt, improved and strengthened its lines and bettered its service. The progress of the Independent telephone movement in the State during the year has been pre-eminently satisfactory. We are greater and stronger than ever before. No defection into the ranks of the Bell worth mentioning have occurred. On the contrary numerous companies that had a taste of the beauties of the Bell sublicense experience have cut loose and returned to the strictly Independent relation." Mr. Lindemuth said this fact is remarkable considering the persistent and expensive efforts put forth by the many Bell representatives sent out during the year. "It is safe to say that every Independent company in the State has been approached by Bell representatives during the year—some once and others many times. The meagre success speaks volumes for the wisdom and loyalty of the Indiana Independents," said he.

"Twenty-seven additional companies have joined the State Association during the year. This increase is certainly very gratifying. At this rate in a few years every Independent company in the State will be joined in a compact organization easily able to protect itself and shield the public from the encroachments of unscrupulous competition. There are 182,000 Independent telephones in use in the State, while the Bell and sub-licensee telephones in the State number only 45,000. The value of Independent property in the State as shown by the returns to the State Tax Board is $20,000,000 and the gross income is reliably estimated at $3,280,164."

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Mr. Lindemuth referred to the acts of desperation and the useless expenditure of enormous sums of money and the dissemination of tons of false literature on the part of the Bell companies to check the growth of the Independents and the final offer to surrender the exchange field in Indiana, Ohio and Michigan, as showing the incorrectness of the words of President Fish, who recently stated that the Independents had made no relative gain.

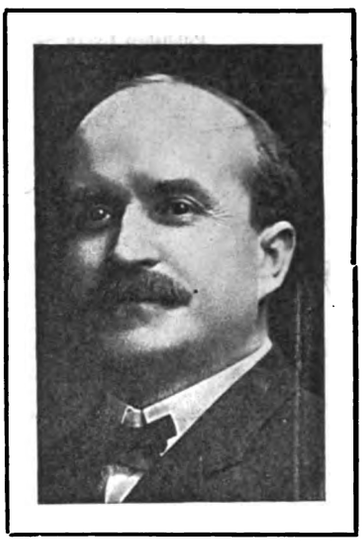
E. M. Kopp, who acted as Secretary at the Indiana Convention.

"The future policy of the Independents is plain and their ultimate success absolutely assured. The prejudice which has grown up against the opposition is wholly justified. The Independents have succeeded because they deserved to succeed. But to make that success permanent two things must be regarded. First, the people must not forget their benefactors and by restrictive and unwise legislation reduce the rates for service below that which is commensurate with the greatly increased service and the high price of labor and material; second, as the Independent companies grow large and strong they must not become unmindful of the rights of the public."

President Lindemuth commended very highly the services of Mr. C. S. Norton, secretary, the members of the executive committee and the district vice-presidents for valuable aid and services during the year.

President Lindemuth's address was received with hearty approval and applause. The showing was so good that it put the convention in an enthusiastic mood in the very beginning.

The secretary-treasurer of the Association, C. S. Norton, presented a report which showed that very effective work has been done during the year and that the Association is in a most prosperous condition. "Every obligation has been met promptly and still a good balance remains in the treasury," said he. Mr. Norton's report shows that there have been no withdrawals during the year, but on the other hand, the membership has been increased 25 per cent. The report concludes with the declaration that the Independent companies and the Independent sentiment are stronger in the State than ever before. The secretary stated that certain propositions have been made by the field agents of the Bell company looking toward a unification of the telephone interests in Indiana, but as these propositions have not been made by the officials of that corporation, the Association officials have given them but little attention, and at no time has the executive committee considered them of sufficient importance to demand action on the part of the Association.



Wm. L. Moellering, Re-elected Member of Executive Committee.

The applications of twenty-seven companies seeking membership in the Association were read and were about to be accepted when the eligibility of some of the companies was questioned, necessitating the reference of the applications to a committee. It was intimated that a few of the companies making applications were connected up with the Bell lines. The committee, however, subsequently reported that all of the applicants were eligible and they were accordingly accepted.

Unusual interest was shown in the reports from the district vice-presidents. There are eleven districts in the State and in every instance the reports showed large gains in the number

(*Continued on page 342.*)

Annual Convention of the Illinois Independent Telephone Association

THE Illinois Independent Telephone Association held its second annual meeting at Springfield, on May 14 and 15. The meeting was largely attended, about 150 officials, managers and operators of the Independent telephone companies of the state being present, among the number being about forty lady chief operators. The meeting was characterized by the harmony which pervaded the sessions, and by the absence of any bitterness shown by the speakers toward the Bell Telephone company, though they at the same time announced their determination to fight that company in a business way and to enter into no agreements regarding exchange of service. A number of interesting papers were read at the sessions, and on the evening of the first day the local committee tendered the visitors a theatre party at Chatterton's opera house, to witness the entertainment by Billy Link's Vaudeville Company.

An interesting feature of the convention was the school for instruction of operators, conducted by Miss T. Barnes, chief operator of the local company of the Inter-State Independent Telephone and Telegraph Company.

Edward R. Conklin, of Aurora, the president of the association, was unable to be present at the convention, and W. H. Bassett, of St. Louis, Mo., a member of the executive committee, presided at the morning session on Tuesday, and Manford Savage, of Champaign, Ill., at the afternoon session that day and the morning session on Wednesday, being succeeded at the afternoon session by Mr. Bassett, the newly elected vice-president. The other officers, with the exception of Mr. Conklin, were present.

The Tuesday morning session was spent in the appointment of committees and preliminary work. C. B. Cheadle, of Joliet, secretary of the association, when a motion was made by J. S. Dailey of Clinton that a committee be appointed to select questions for the "question box," rose and stated that he had prepared a list of fifty questions and had sent letters to eighty-three members of the association assigning to them questions which they were to take, in some cases two persons being assigned to the discussion of one question.

Secretary Cheadle read an invitation from the Chicago Commercial Association, inviting the association to hold its next annual meeting in that city. The communication was referred to the executive committee with power to act.

Mayor Griffith in his address of welcome claimed that Springfield was the best convention city in the state of Illinois. Competition in telephone business is a good thing the mayor believes. He said in his address at the convention that it helps reduce rates and is a means of securing better service for the patrons of the two or more lines in competition.

On behalf of the association, Vice-President Savage of Cham-

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paign thanked the mayor for the address of welcome. Reports of the officers of the association which were read during this session, showed that most satisfactory conditions have prevailed during the past year.

Colonel J. H. Hackett of Jacksonville was the first on the afternoon programme in the matter of reading a paper before the convention. His topic was "The Past and Present Conditions of the Telephone Business." He spoke of the rates being maintained and in some cases increased in the country.

Manford Savage, President of the Illinois Association.

The next speaker of the afternoon was J. S. Dailey of Chillicothe, and his address was entitled, "The Fallacy of Free Exchange and Cheap Switching." His address in part is as follows:

"Free exchange is parsimony rather than economy; it is 'robbing Peter to pay Paul.' A commercial axiom is, that in getting something for nothing, some party to the transaction must suffer a loss.

"One aspect of the situation is, where an each-one-owns-his-own-sort of a happen such, not built for profit, and go to the dogs when it is worn out, exchange, or rather switching center, is adjacent to a city exchange, where an up-to-the-minute system is built and operated by business men who expect to derive a fair return from their investment, and free exchange is demanded by their cheap-service neighbors. It does not require any argument to show the injustice done the up-to-date- exchange. Not only does the element of maintenance cost enter into the connecting link, but the congestion of its local lines with free transit of silly gossip from a neighboring exchange, retarding the service due its own subscribers and reducing the relative efficiency of its system.

"Cheap switching encourages cheap construction—the root of poor service. In this age intelligence demands a higher wage scale than the physical efforts of a human machine. Yet, however, it is essential to have the best combination of intelligence and skill at the switchboard in order to obtain the best results. Such a combination demands just remuneration, the payment of which commands adequate switching fees."

C. S. Haukins, Re-elected Treasurer of the Illinois Independent Telephone Association.

In the afternoon, commencing at 4 o'clock, Miss T. Barnes, chief operator of the Springfield office of the Inter-State Telephone Company, gave a school of instruction for the operators of the Independent systems who attended the convention. Miss Barnes has the reputation of being the best informed chief operator in the State and she was eagerly followed throughout her half hour's demonstration.

In the evening a theatre party was given by the association in honor of the visiting delegates. The party occupied the greater part of the first floor of the opera house.

In the evening, at the Hotel Silas, a stereopticon lecture was delivered by J. H. Shoemaker, of Waterloo, Iowa.

The morning session of the second day opened with Manford Savage, vice-president, presiding. The paper read by Miss T. Barnes, chief operator of the local Inter-State Telephone Company, was the first number on the programme, after the procedure had been greatly altered. Her paper was on "Exchange Operating."

Miss Barnes held the attention of every one of the 250 delegates and guests who were in the room at the time she took the floor.

George H. Glass of Pekin spoke on the topic "The Manager; His Duty to Patrons and Employees." He described the ideal manager as a gentleman, honest, generous, brave, wise, of lofty and noble aims, always with a smile, and a man of parts. He must be able to talk entertainingly on all subjects and at any time and with anybody. He must set a good example for his employees by paying his bills promptly. In fact, the manager of a modern telephone plant must be one posted on everything and know everything.

A discussion on "Operating Methods and Building and Handling of Switchboards" was to have been led by John F. Casey, but on account of his absence the paper was read by A. J. Shands of St. Louis, Mo. The paper dealt entirely with the observation desk, a feature new to most exchanges.

The afternoon session convened at 1:15 o'clock in the usual place, with William H. Bassett of St. Louis presiding. The afternoon was spent, for the fore part, in the discussion of the paper, "The Scrap Book," read by B. F. Wasson of Clinton. It was along the line of saving important items from newspapers and technical magazines. The discussion lasted for half an hour on this paper and was very beneficial to the greater number of delegates from the smaller exchanges, who agreed as to its inestimable value.

C. B. Cheadle, Re-elected Secretary.

The following resolution was adopted by the convention:

"Resolved, That it is the sense of this convention that the growing tendency of permitting the Bell Telephone company to connect their toll wires with Independent switchboards is a practice we believe detrimental to Independent telephony, and should not be countenanced by this association."

A committee to establish toll rates between the various companies was named by the acting president, and is composed of James W. Barrett of Pekin, L. A. Herrick of Freeport, and Edward D. Glandon of Pittsfield. A uniform scale will be adopted and the report of the committee will be made in the near future.

Manford Savage of Champaign was elected president of the association. William H. Bassett of St. Louis was placed in nomination for the vice-presidency by George H. Glass, of Pekin,

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The Telephone Wire Plant*—Continued

By S. P. Grace, Chief Engineer C. D. & P. Tel. Co.

In such a system of distribution as has been outlined, there will, of course, be many streets and districts where for the present time aerial cable is not warranted. If these districts are in the neighborhood of an aerial cable base line, and the subscribers are not located more than 1,000 feet away from the cable line, it is economy to connect them with twisted, pair wire strung on distributing brackets rather than to resort to the use of bare wire and cross-arms, where perhaps a large part of the arm capacity will lie idle for several years. This method of wiring is shown in Fig. 12. If the side streets are clear of trees and it appears probable that many of the circuits will be more than 1,000 feet long, the distribution should be made by means of bare wire on cross-arms, as shown in Fig. 20. Generally speaking, the bare wire on these side lines should be of copper, for at the present time with so much sulphurous smoke in the atmosphere of our cities and towns, the life of iron wire is too short to give the wire serious consideration. Copper wire smaller than

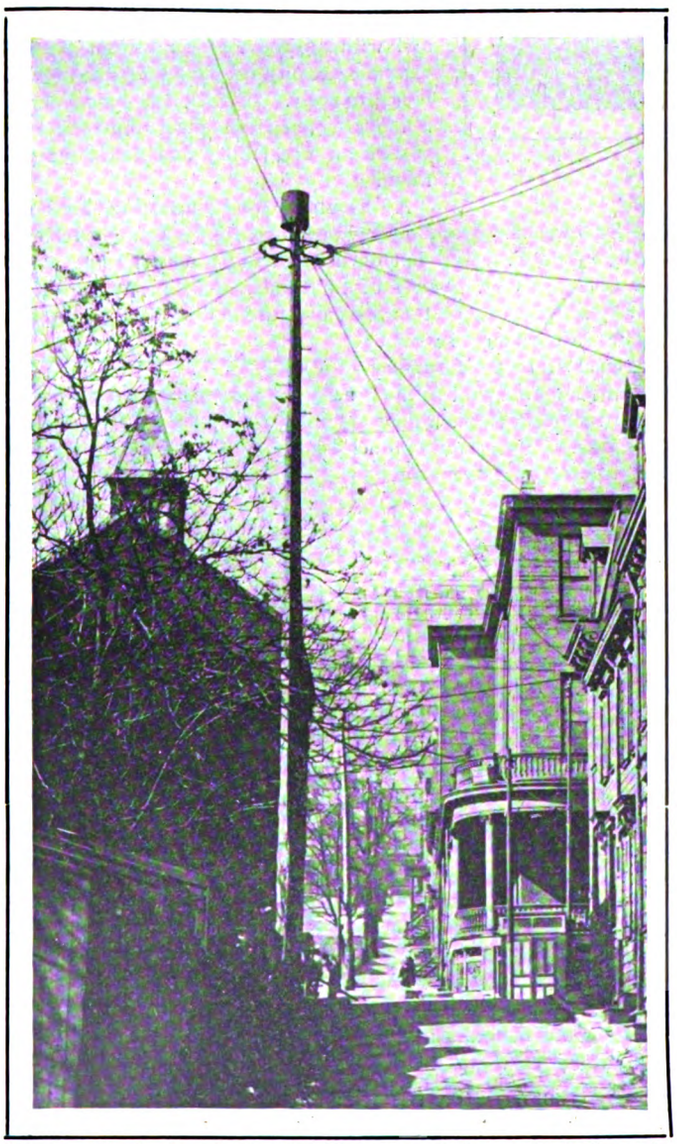

Fig. 13. Distribution of subscribers' lines from circle top distributing pole.

No. 14 N. B. S. or No. 12 B. & S. gauge cannot safely be used in spans because of its low tensile strength. This size of wire is not required for conductivity, since in the places where this wire is usually strung we would be satisfied with a cable conductor of 19 or 22 gauge. Here again it also seems possible to make considerable saving by the use of copper-clad steel wire. A No. 14 B. & S. or No. 16 N. B. S. copper-clad wire is sufficiently strong mechanically and has

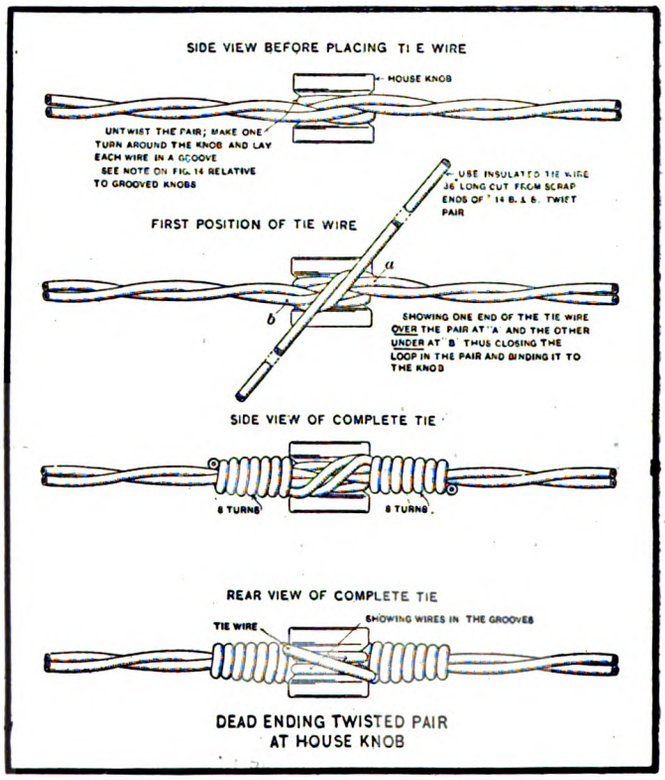

Fig. 14. Method of tying twisted pair insulated wires to porcelain knobs.

a conductivity equivalent to a 19-gauge cable pair. This will reduce the first cost of line wire about one-half. The copper-clad wire will be just as durable as copper, and since its strength lies on the inside rather than in the hardened outside shell, it will be subject to a lesser number of breaks and besides it can be taken down and used in other places. It is usually necessary to scrap copper wire when taken down, for, as a rule, it will not stand re-stringing in another location without causing much trouble from breaking, due to nicked and scratched spots.

When the open-wire subscribers' circuits fills several cross-arms, it is generally economical to replace them with a cable. From studies which we have made it has been found that when a cable is placed on a lead of this character, it is economy to remove the open wires and cross-arms and returne them to stock rather than attempt to use them for distribution from taps placed one to two blocks apart on the cable. The removing of open wires when the cable is placed cleans up the line in good shape, makes it easy to maintain, and far more sightly to the public. It would seem that the aerial cable system of distribution of telephone lines is the most ideal system now known for districts where for the present conduits are not justified. Practically all the large telephone companies have realized the economies to be obtained by its use, and during the last three years thousands of miles of this kind of cable distribution have been placed.

Since the wire plant requires the major portion of the money expended for a telephone system, and since there are so many varied and complex factors entering into its design, the greatest care should be given to its engineering.

*Abstract from paper presented at the 128th meeting of the American Institute of Electrical Engineers, April 26, 1907.

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The most important problems in connection with the wire plant are:

1. The development plans which must be carefully worked out by the engineer so that not only the first cost of the plant will be a minimum, but so that the plant can take care of increases in business from time to time without unnecessarily large expenditures for redesign and reconstruction.

2. The transmission must be carefully studied so that there will be a good volume of talk between any two connected subscribers. The circuits, whether in cable or in open wire, should be graded, and if necessary loaded so that

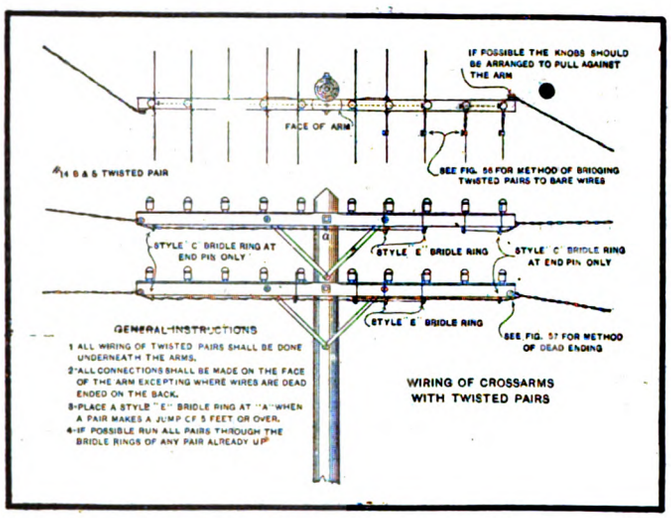

Fig. 15.—Distribution of subscribers' lines by means of open wire on cross arms. Twisted pair drops to subscribers' premises.

while the transmission is sufficiently good it will not be given over unnecessarily expensive trunk lines.

3. The underground system must be extended as rapidly as it is economical to do so, and direct terminal or interior block connections made with the maximum number of subscribers.

4. In the outlying districts where pole lines will still be resorted to, every effort must be made so to design and construct these lines as to have them of low first cost and annual charges. They must be but slightly affected by the elements and free from interference from electric light and power circuits. These aerial systems must be made sightly to avoid the criticisms of the public.

5. The engineer must constantly seek for new and improved types of material and construction methods to be used in the wire plant, so that the first cost and maintenance can be reduced.

ANNUAL CONVENTION OF THE ILLINOIS INDEPENDENT TELEPHONE ASSOCIATION.

(*Continued from page 337.*)

and his name was accepted as that of the next vice-president. The election of Charles B. Cheadle of Joliet as secretary of the association was the signal for a great demonstration in his honor. He had long been classed as a hard worker in the interest of independence and was easily the favorite for re-election. C. S. Hankins of Decatur was re-elected treasurer of the association.

The executive committee composed of E. R. Conklin of Aurora, C. B. Cheadle of Joliet, C. S. Hankins of Decatur, W. H. Bassett of St. Louis, Mo., C. O. White of Princeton, Manford Savage of Champaign, and J. W. Barrett of Pekin, was re-elected man for man. There was but one change in the list of vice-presidents of the association. In the eighth district G. L. Chapman of Tuscola was elected to succeed C. W. Shimley of Casey. The vice-presidents of the association now stand: First district, A. J. Vernier, Kankakee; Second district, Frank Zinnell, Savannah; Third district, F. M. Ashe, Kewanee; Fourth district, B. F. Wasson, Clinton; Fifth district, J. S. Dailey, Chillicothe; Sixth district, W. J. McQuiston, Monmouth; Seventh district, W. H. Ramsey, Auburn; Eighth district, G. L. Chapman, Tuscola; Ninth district, W. H. Bassett, St. Louis, Mo.; Tenth district, Hon. C. E. Hull, Salem; Eleventh district, H. R. Aisthorpe, Cairo.

The matter of selecting a city for the third annual convention is in the hands of the executive committee, and they will not report until about a month or so before the next convention. Springfield, Pekin and Chicago are in the field for the honor. Each has its adherents, but the fight is most likely to be between Pekin and Springfield.

DEATH OF CHARLES F. CUTLER

CHARLES F. CUTLER, President of the New York Telephone Company, died suddenly of heart disease at Saranac Inn, Saranac Lake, on Saturday, May 18th.

Mr. Cutler was born in Ashland, Mass., in 1841. He began business as a young man in South Framingham, Mass., as a commission merchant, later becoming interested in the telephone business in South Framingham. Later he went to Brooklyn, where he formed The New York & New Jersey Telephone Company, of which he was made president.

He then went to New York City and joined the Metropolitan Telephone & Telegraph Company, afterward the New York Telephone Company. At the time of his death he was president of the New York Telephone Company and chairman of the Board of Directors of these companies: The New York & New Jersey Telephone Company, the Bell Telephone Company of Philadelphia, the Delaware & Atlantic Telegraph & Telephone Company, the Chesapeake & Potomac Telephone Company, the Hudson River Telephone Company, the Central New York Telephone & Telegraph Company, the Empire State Telephone & Telegraph Company, and the New York & Pennsylvania Telephone & Telegraph Company. He was also connected with several banks and banking institutions, and a member of the following clubs: Metropolitan, Riding, New York Athletic, Lawyers, Morristown, Whippany River, Morris County Golf Club, and the Morristown Field Club. He was known all over the United States as a man of unusual business ability and probably did more than any other one man to develop the telephone interests with which he was connected.

Fig. 16. Interior block distribution. Suspending wires from building to aerial cable terminal on pole.

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THE EDITOR'S PAGE

CHIEF OPERATORS AS BUSINESS PRODUCERS.

PERHAPS of all the plans which have been tried by Independent telephone companies for getting their subscribers to use new Independent toll lines none is more valuable than that of direct conversation between the chief operator of the telephone company and the subscriber. Wherever this idea has been put in practice the chief operator calls up the subscriber, and, after perhaps making some general inquiry about the service, in order to see whether it is satisfactory, and to put the subscriber in a good humor, takes up the question of toll calls.

After telling the subscriber what lines can be put at his service, the chief operator may endeavor to find out the names of the persons called up by that particular firm in several cities which may be reached by the company's toll lines, and possibly have a connection put up immediately if the subscriber has never used an Independent toll line to the points mentioned. A single convincing example is worth more than hours of general soliciting.

One of the principal advantages over an outside man which the chief operator has in bringing toll business to the attention of subscribers is her perfect familiarity with the service, and her ability to see that the man gets a good start when he first uses the lines. If a solicitor highly recommends toll service to certain points, and a man calls up a subscriber at a distant place and receives a noisy connection, is cut off, or finds some other difficulty, he is extremely likely to set the solicitor's remarks down to excessive zeal in the desire to obtain business. The solicitor is recognized as a business getter, and his statements are likely to be discounted to a certain extent by business men. On the other hand, the chief operator, if she is alive to possibilities open to her in this line, will not permit the subscriber to feel that she is taking too strong an interest in increasing the amount of toll charges which he pays to the telephone company, but that her efforts are conducted more especially from a service standpoint. She assumes that the subscriber is doing a certain amount of toll business, and that he desires to do more if he can obtain satisfactory connections. Her statements are rather the expressions of personal interest which she takes in the quality of the service, for which she is responsible, and being received as such carry additional weight when backed up by good results in an actual conversation.

CONDITIONS IN TELEPHONE LINE DISTRIBUTION.

SOME extremely valuable points are brought out in Mr. Grace's Institute paper on the Telephone Wire Plant, which is concluded upon another page in this issue. It is noteworthy that the large relative cost of the outside wire plant makes the class of engineering referred to one which is highly productive of economy to the telephone company, and therefore broadly distinguished from other branches which have for their object the effecting of improvements in the efficiency of the service rendered to the subscriber.

The studies described in the paper referred to have been so carefully worked out that they have resulted in the introduction of apparatus and methods which are believed to thoroughly satisfy many requirements of distribution in a number of important cities where they have been at least partially adopted. The junction box possesses advantages which come from the economy with which it may be constructed and installed, and also certain other points which make for economy in a less direct manner. For example it lends itself very readily to a plan of distribution which is far more sightly than older methods, and so undoubtedly will make it easier for a company to obtain rights of way over certain classes of property. Then, too, its construction is so simple that by proper tagging of the wires there is little opportunity for even the most incompetent inspector to leave a box in poor condition.

A general conclusion which is especially worthy of attention is that relating to the idea of installing many small terminals, and making open wire leads to the substation as short as possible. Mr. Grace makes his statement on this point very emphatic and will no doubt be agreed with by many of the most prominent engineers throughout the country. It will be especially interesting to watch the extent to which this type of distribution is carried, and various methods adopted, during the next two or three years.

PLANNING FOR GROWTH.

IN spite of all that has been said about the great losses incurred by underestimating the rate of growth of the telephone business, there are still many companies starting to operate new plants, or undertaking reconstruction work, without adequate provision for future increase. Perhaps the greater amount of attention which has lately been devoted to cable distribution has resulted in somewhat better conditions in the outside plant than prevailed two or three years ago, but even yet the main considerations which apply to central office growth are not given their full value in a very large percentage of cases.

When a new plant is located the first consideration should be to place it on a lot extending beyond the walls of the building sufficiently to allow of the extension of the telephone plant to a full reasonable ultimate capacity, without the purchase of additional property at a time when the interests of the telephone company may make it necessary to pay a premium above the proper value. The question of expansion within the building requires very careful estimating. The thing to be borne in mind is rather that the question is one of relative proportions of space required for different classes of work performed at various periods of the growth of the company. These relations should be carefully worked out, and the space laid out so that correct proportions in all departments may be attained at the time the switchboard is filled to its ultimate capacity. When getting figures based on an ultimate addition to a building constructed of comparatively small size, to be extended later, the problem becomes especially complicated, but its difficulty does not in any way relieve the management of the necessity of its solution.

In the laying out of apparatus itself it is essential to plan a switchboard lay-out to give good natural lighting to all the positions and permit supervision by the chief operator, not only for the initial installation and immediate future, but for all the various sizes of switchboard which may be installed up to and including the ultimate. The underground cable entrance and frames used for the terminal and auxiliary apparatus need to be all laid out on the floor, and to have such racking as is required for cable placed in such a manner that the frames can be extended to correspond to the growth of the switchboard without any crowding, relocating of apparatus or cutting of cables. It is true that building for the greatest ultimate convenience in these respects involves at first considerable charges on unoccupied space, but it is hardly probable that the time has yet come for the business to cease to grow at a rate so fast that these charges as they accumulate will be far less than the expense of rebuilding the central office at a later date.

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THE TELEPHONE IN THE COURTS

CONDUCTED BY A. H. MCMILLAN.

Readers are invited to submit questions on any point of Telephone Law. They will be answered and explained on this page.

A BINDING CONTRACT.

Please inform me if, in your judgment, the enclosed contract is binding if signed as indicated. We have such a contract with a telephone company and just at this time would like to know if it is binding under the laws of this State. J. K.

The contract purports to be between two telephone companies, the party of the first part agreeing to give without cost to the stockholders of the party of the second part, members of their families or visitors, the free use of first party's lines for ten years; except that in case a stockholder of the party of the second part allows any person not included in the clauses above mentioned, the free use of the lines, and such party refuses to pay the tolls, such stockholder of the party of the second part shall be denied the further use of the lines until the tolls are paid. It is also agreed that if either company passes into the control of an incorporated company the agreement is to be null and void. The agreements are signed and sealed by the presidents and secretaries of the companies mentioned.

IN the opinion of the editor, the contract referred to is valid and binding according to the laws of Pennsylvania. The minds of the parties have met upon what they wish their contract to be, and the proper officers of each company have executed it in proper form. The provisions of the contract are such as might lawfully be made, and no reason is seen why the contract should not be held good. This is, of course, upon the presumption that the presidents and secretaries of the companies had proper authority to execute it for the members thereof.

TEN CENTS PER POLE HELD REASONABLE TAX.

JUDGE SCOTT, at Easton, Pa., handed down an opinion which is of great importance in that State. In 1905 the legislature passed an act which permitted telephone, telegraph and electric light companies to appeal to the court of common pleas to fix the amount which they were to pay annually as a license fee on poles and wires.

The Pennsylvania Telephone Company filed its petition, under this act, against the borough of South Bethelem. The borough filed an answer and contended that the act of assembly was unconstitutional. The court, however, held this objection to be unfounded. The court of common pleas of Bucks County fixed the amount at five cents a pole. The court of common pleas of Cumberland County fixed the amount at ten cents per pole. The court of Allentown follows the latter court, and fixes the amount to be paid by the Pennsylvania Telephone Company to the borough of South Bethlehem at ten cents a pole.

The South Bethlehem ordinance fixed the annual tax at $1 per pole for all poles within the corporate limits, and besides lays a tax of $5 per mile on wires strung. These taxes will not be valid under this ruling.

CONSTRUCTION OF WORDS IN FRANCHISES.

IN a franchise giving an electric company the right to "erect and maintain poles, trolley, feed and stay wires and other devices for conducting electricity in, over and under the streets, highways, bridges and town ways, in any of said cities and towns wherein it has been or may hereafter be authorized by the board of aldermen or selectmen to operate," the court considered the construction of the word "wherein," which might refer to either the words "in any of said cities and towns" or to "streets, highways, bridges and town ways." The plaintiff, who was seeking to enjoin the company from maintaining poles and wires in one of the streets of Taunton, Mass., and to compel the removal of poles and wires that had been erected there by the company, contended that it related to the latter phrase, while the company contended that it referred to the former. The plaintiff's contention, if sustained, would restrict the erection of poles to these streets on which it had previously been authorized by the municipal authorities to build its line. The adoption of the defendant's contention would permit it to build anywhere in the State. The court held it to be a general rule that a limiting or qualifying word or clause must be confined to the last antecedent unless the subject matter requires a different construction. The word "wherein" is not a word, said the court, that naturally would be chosen to relate to bridges, while it is strictly correct as referring to cities and towns. So it was held that the word "wherein" related to the words "any city or town" and included all parts of such cities or towns, so the electric company might build anywhere within the limits of the said town. Williams vs. Old Colony Street Railway Co., 79 N. E., 484.

TRANSMITTING MESSAGES IMPARTIALLY FROM PAY STATIONS.

THE Supreme Court of New York has decided the case of Gifford vs. Glen Telephone Company to recover $100 damages for an alleged violation of the transportation corporation's law relating to the failure of a telephone company to transmit messages with impartiality and in good faith. Gifford alleged that he went to the company's pay station for the purpose of using the telephone. The instrument in use was the ordinary wall telephone with a metallic box attached to it, into which the party using the telephone was directed by printed instructions to drop the toll money. The box contained express instructions that no money should be deposited therein until the customer was told to do so by the operator, after taking down the receiver. The plaintiff dropped his money into the box without waiting for such directions, and after calling up the operator and being told to deposit his money, said that he had already done so. The operator replied that she had not heard it drop, because the receiver was on the hook and she was shut off from the instrument. The money box had no electric connection with the telephone, and the only means that the operator had of knowing that the money had been deposited was by hearing a bell ring a certain number of times for each toll charge. She told Mr. Gifford that if he would deposit his money she would place him in communication with the party he desired to talk with, and if he paid twice the overcharge would be returned to him. This he refused to do, and brought suit.

The decision of the court was in favor of the telephone company. The Court was of the opinion that if every fact as claimed by the plaintiff was found in his favor, nevertheless he would not be entitled to recover. It was their opinion that the statute imposes the penalty not for an error of judgment of one of the company's operators, a defective instrument or a misunderstanding as to whether a required charge for a message has been paid, but solely for the refusal to transmit dispatches with impartiality, good faith and in the order of their reception after payment of the usual charges as established by rules and regulations of such corporation.

Gifford vs. Glen Telephone Co., N. Y.

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THE INDIANA TELEPHONE CONVENTION.

(*Continued from page 336.*)

of subscribers during the year, increased gross receipts, extensive improvements and miles of new extensions. Some of these reports recited troubles and explained how they were overcome, others told of competition and rate cutting, but every report showed a victorious warfare against opposition and a healthy, steady and permanent development. An interesting feature of these reports is the comparative showing of the number of Bell and Independent instruments in use, also the number of each removed during the year. The reports show a large number of Bell instruments removed during the year and that the relative number in use is nearly five to one in favor of the Independents.

Following the reading of the district reports Mr. Frank L. Beam, president of the Ohio Independent Telephone Association, was introduced and addressed the convention briefly.

The banquet given at the Claypool Wednesday night by the Indianapolis Telephone Company and the New Long Distance Telephone Company was one of the largest and most enjoyable occasions of the kind ever held in the State. After a seven course dinner, the Hon. Thos. E. Davidson acting as toastmaster introduced each speaker in a pleasing manner. Among those who spoke briefly were Col. J. D. Powers, of Louisville; James S. Brailey, Jr., of Toledo, O.; D. E. Sapp, of Mt. Vernon, O.; James P. Goodrich, of Winchester; A. L. Têtu, of Indianapolis, and A. J. Payton, of Rockport. Notwithstanding the various topics assigned to each speaker the burden of their remarks dwelt upon the alleged proposition to enter into a working coalition with the Bell company Each of the speakers registered a strenuous objection to such a plan and sounded a warning against a proposition to "tie up" in any manner with the Central Union lines. There was much interest shown and considerable encouragement derived from the speech of Mr. Brailey, president of the Indianapolis Telephone Company and the New Long Distance Telephone Company. Mr. Dwight E. Sapp, of Ohio, spoke with eloquence, and made a happy hit by witty references to Indiana authors, poets and presidential timber. At a late hour the company rose and sang "America."

At the opening of the Thursday morning session a telegram was read from B. G. Hubbel, of Buffalo, N. Y., expressing regrets because of his inability, by reason of illness, to be present and read a paper. Speeches by Theodore Gary and E. B. Fisher were received with enthusiasm.

At this point the convention went into executive session and for three hours a free and animated discussion was had of the alleged tentative proposition of the Bell company, looking to a coalition and division of the exchange and toll line business. The executive committee made a report to the effect that no official proposition had been made and, therefore, there was nothing before the convention for discussion. The discussion, however, arose over the adoption of the committee's report and President Lindemuth thought it advisable to let the members thresh it out. The argument was practically unanimous against considering such a proposition and the vote showed conclusively that the Independents are opposed to any plan or working agreement with the Bell company.

An important amendment was made to the by-laws, providing that hereafter any Independent company that has direct Bell connection shall not be eligible to membership in the Association. The constitution was also amended so that any company now a member of the Association that is found to have formed connections with the Bell system shall forfeit its membership. The election of officers resulted in the selection of the old officers for new terms, as follows: President, A. C. Lindemuth, Richmond; Secretary-treasurer, C. S. Norton, Indianapolis; Executive Committee, A. C. Lindemuth, C. S. Norton, Theodore Thorward, J. W. Weik, Thos. E. Davidson, C. D. Knoefel and W. L. Moellering.

The following delegates were elected to attend the convention of the International Independent Telephone Association in Chicago, June 4, 5 and 6:

W. J. Devol, Lebanon; Thos. E. Davidson, Greensburg; F. S. Shoemaker, Bloomington; A. J. Payton, Rockport; R. F. Faulkner, New Castle; George C. Hitt, C. S. Norton, Indianapolis; Jas. P. Goodrich, Winchester; F. O. Cuppy, Lafayette; Jesse W. Weik, Greencastle; J. E. Yarling, Peru; Theodore Thorwood, South Bend, and F. W. Shirmeyer, Decatur.

DIRECTORY OF EXHIBITORS AT THE INDEPENDENT TELEPHONE CONVENTION.

Room Numbers.	
642	American Electric Fuse Co., Muskegon, Mich.—Protective devices.
134	American Electric Telephone Co., Chicago, Ill.—Switchboards, telephones and parts.
618	American Steel and Wire Co., Chicago, Ill.—Wire and cable.
650	American Sewer Pipe Co., Pittsburgh, Pa.—Underground clay conduit.
601-2	Automatic Electric Co., Chicago, Ill.—Automatic telephones and systems.
610-2	Belden Manufacturing Co., Chicago, Ill.—Wires, cords, etc.
136	Carnahan-Sherwood Co., Indianapolis, Ind.—Accounting system, blank books and forms.
616	Central Telephone & Electric Co., St. Louis, Mo.—Telephone apparatus, protective devices and specialties.
658	Century Telephone Construction Co., Buffalo, N. Y.—Switchboards, telephones and parts.
648	Chance Manufacturing Co., Centralia, Mo.—Lightning arresters.
620-2-4	Chicago Telephone Supply Co., Elkhart, Ind.—Switchboards, telephones and parts.
604-6	Cook, Frank B., Chicago, Ill.—Terminals, protective devices and accessories.
On Parlor Floor	Dean Electric Co., Elyria, Ohio—Switchboards, telephones and parts.
638	Durant Electric Supplies Co., Chicago, Ill.—Telephone and electric material.
662-4	Electric Appliance Co., Chicago, Ill.—Switchboards, telephones and accessories.
608	Ericsson, L. M., Telephone Manufacturing Co., Buffalo, N. Y.—Switchboards, telephone parts and novelties.
656	Eureka Electric Co., Genoa, Ill.—Switchboards, telephones and parts.
610-2	Homer-Roberts Telephone Co., Chicago, Ill.—Party line lockout systems.

Room Numbers.	
613	Indiana Steel & Wire Co., Muncie, Ind.—Wire.
102	International Telephone Manufacturing Co., Chicago, Ill.—Switchboards, telephones and parts.
644	Matthews, W. N., & Brother, St. Louis, Mo.—Anchors, cable, stringing apparatus and specialties.
611	Miller Anchor Co., Norwalk, Ohio.—Anchors.
130-2	Monarch Telephone Manufacturing Co., Chicago, Ill.—Switchboards, telephones and parts.
104-6	National Pole Co., Escanaba, Mich.—Poles.
628	Nagel, W. G., Electric Co., Toledo, Ohio.—Telephone and electric supplies.
652	National Carbon Co., Cleveland, Ohio.—Batteries and carbon specialties.
640	North Electric Co., Cleveland, Ohio.—Switchboards, telephones and parts.
660	Nungesser Electric Battery Co., Cleveland, Ohio.—Batteries and specialties.
Writing Room.	Sterling Electric Co., Lafayette, Ind.—Reception room for entertainment of guests.
637	Select Telephone Manufacturing Co., Springfield, Ohio.—Telephones and lockout systems.
634-6	Stromberg-Carlson Telephone Manufacturing Co., Rochester, N. Y.—Switchboards, telephones and parts, wire and cable.
632	Swedish-American Telephone Co., Chicago, Ill.—Switchboards, telephones and parts.
609	Universal Pole & Post Preserving Co., Circleville, Ohio.—Pole preservative, specimen treatments.
614	Vote-Berger Co., La Crosse, Wis.—Anchors, switchboards, telephones and parts.
639	Western Telephone Manufacturing Co., Chicago, Ill.—Telephones, parts and accessories.
647	Wire & Telephone Co. of America, Rome, N. Y.—Long distance hand telephones and rubber covered wire.

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With GRAY PAY STATIONS you simply drop the coin in the slot

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FOR SALE.—We offer for sale the following assortment of Stromberg-Carlson Central Energy telephones displaced by our installation of Automatic equipment:

250 Type E central energy desk telephones with stationary head, corrugated nickel-plated pedestal, black enamel metal base, bipolar receiver, gold electrode transmitter.

1,000 No. 204 desk telephones with adjustable transmitter, knuckle joint arm, nickel-plated pedestal and base, same transmitter and receiver as above.

100 Type C. E., latest style desk telephone with No. 4 transmitter, all rubber bipolar receiver, black rubber pedestal, nickel-plated base, induction coils at end of cord instead of in base. A modern instrument.

1,000 Former type ZZ, later known as No. 37, business style central energy wall telephones complete with triplet set consisting of combined switch-hook, transmitter with adjustable arm, bipolar receiver, etc. This instrument is provided with shelf.

100 Former type Z, later known as No. 35, residence style, central energy wall telephone without shelf, otherwise same as No. 37.

These instruments are in good condition and will be sold at a reasonable figure. Prices will be furnished upon application to W. F. LAUBACH, Manager, Akron People's Telephone Co., Akron, Ohio. 822

FOR SALE—Post hole digging, hoisting and cable pulling machine mounted on trucks. Also one No. 6 cube concrete mixer, and other construction apparatus. Above used four months. Address Quincy Home Telephone Co., Quincy, Ill. 839

FOR SALE—85 Kellogg 60-cycle party-line ringers complete; 100 Kellogg 20-cycle party-line ringers complete; 8 Kellogg 60-cycle single gong desk set boxes for two conductor cords; 8 Kellogg 20-cycle single gong desk set boxes for two conductor cords; 1 Holtzer-Cabot 24 volt direct current motor generator, 75 volt alternating and pulsating generator. Address Knox County Home Telephone Co., Vincennes, Ind. 842

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

POSITION WANTED—A first class man wants to make change. Would like position as Manager or Wire Chief. Twelve years' experience. A-1 reference. Address, Box 825, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 825

WANTED—Position by good troubleman experienced in line, office, and instrument trouble. In other respects am willing to render myself generally useful. Satisfactory testimonials. Address Box 828, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 828

WANTED—Back numbers of AMERICAN TELEPHONE JOURNAL for January, February and March, 1907. Address, stating lowest price, Box 840, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 840

WANTED—Position by married man of 24 as bookkeeper or collector, six years' office experience. Wishes to learn management of exchange. Address Box 65, Jonesboro, Ind. 835

WANTED—Position with telephone company on construction or instrument work. Five years' experience, best of references. Address Box 836, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 836

WANTED—Position as manager or superintendent of telephone exchange. Central energy or magneto. Can furnish best reference as to ability, habits, etc. Address Box 841, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 841

WANTED—Salesman for telephone instruments and supplies for New York State, Pennsylvania or the Middle West. An exceptional opportunity for the right man. Address Box 843, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York City. 843

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Sole Manufacturers

WILLARD L. CANDEE, H. DURANT CHEEVER, } Managers

GEO. S. MANSON, Superintendent
W. H. HODGINS, Secretary

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IN THE OPERATING FIELD

A. L. TETU ASSUMES MANAGEMENT OF THE HOME TELEPHONE COMPANY AT PORTLAND, OREGON.

FOR more than a year past A. L. Têtu has been general manager of the New Long Distance Telephone Company and the Indianapolis Telephone Company, of Indianapolis, Ind. A few days ago he announced that he had resigned from both of these positions to take charge of the business and development of the Home Telephone Company, which has its headquarters at Portland, Oregon, and covers a considerable territory outside of the city, including a number of important exchanges in neighboring cities and towns.

Mr. Têtu, who will have the title of general manager, will be accompanied by A. Berridge, formerly auditor of the two Indianapolis companies, and by C. J. Langdon, superintendent of the Indianapolis Telephone Company, each of whom will take a similar position in Portland. For the present the duties which formerly devolved upon Mr. Têtu as general manager of the Indianapolis companies will be carried on by James E. Brailey, of Toledo, O.

OBITUARY.

MR. GEORGE H. COLE, supervising architect for the Southern Bell Telephone & Telegraph Company, died in Atlanta on May 10th of pneumonia. He was born in Westport, N. Y., on November 24, 1838, and was connected with the Southern Bell Telephone & Telegraph Company for a period of 22 years, and he was actively engaged at his usual vocation up to within one week of his death. Prior to his connection with the telephone company he was associated with the Western Electric Company, where he was engaged in the development of the earlier forms of telephone and telegraph apparatus. His long connection with the telephone business and the high esteem in which his personal qualities were held make his loss one which will be deeply felt by many telephone men.

CONVENTION PROGRAM

The International Independent Telephone Association, Auditorium Hotel, Chicago, June 3-6, 1907.

JUNE 3—MORNING.

Meeting of Committees on Physical Standards; Standard Forms of Accounting; Standard Operating Rules and Regulations.

JUNE 3—AFTERNOON.

Meeting of Executive Committee. Meeting of Advisory Board.

JUNE 4—MORNING.

Meeting of Committees in charge of details, as follows: arrangements, entertainment, reception, registration, sergeants-at-arms.

JUNE 4—AFTERNOON.

Convention called to order; address of welcome by Hon. F. A. Busse, Mayor of Chicago; response by H. D. Critchfield, Milwaukee, Wis.; president's annual address, Jas. B. Hoge, Cleveland, O.; officers' reports; appointment of committees; Short Talks on Practical Subjects: "Construction Problems," "Shield Advertising," "Collection Methods"; open discussion; question box.

JUNE 4—EVENING.

Outing at Sans Souci Park; free tickets at registration desk.

JUNE 5—MORNING.

Committee Report, entertainment; written reports of State, territorial and provincial associations; general discussion; The Long Distance Business: "How to Handle It," Frank Hart, Pittsburg, Pa.; "Independent Improvements and Possibilities," C. E. Tarte, Grand Rapids, Mich.; "Long Distance Advertising," W. J. Stadelman, Sioux City, Ia.; "The Toll Line Clearing House," J. M. Plaister, Ft. Dodge, Ia.

JUNE 5—AFTERNOON.

Committee Reports: Standard forms of accounting; Standard operating rules and regulations; "Lest We Forget," Col. J. D. Powers, Louisville, Ky.; "Compulsory Interconnection of Bell and Independents," J. B. Earle, Waco, Texas; J. Walter Barnes, Fairmont, W. Va.; O. C. Snider, Kansas City, Mo.; "Post Office Telephones and Washington Situation," Chas. E. Sumner, Portland, Ore.; "Telephone Securities as an Investment," W. L. Moellering, Ft. Wayne, Ind.; "Frenzied Finance in the Telephone Field," Dwight E. Sapp, Mt. Vernon, O.; "Where the Copper Comes From," J. S. Haley, Livingston, Mont.; question box.

JUNE 5—EVENING.

Informal Banquet, 7:30 P. M., in Banquet Hall, Auditorium Hotel, C. W. Kline, Hazleton, Pa., toastmaster.

JUNE 6—MORNING.

Committee Report: Physical standards; "Rural Telephony—Its Value to the Community and Relation to the Independent Movement," C. H. Schweitzer, La Crosse, Wis.; "Making History in the Canadian Northwest," Francis Dagger, Winnipeg, Man.; "The Strength of the Chain," James S. Brailey, Jr., Toledo, O.; "The Indiana Situation," Chas. S. Norton, Indianapolis, Ind.

JUNE 6—AFTERNOON.

Reports of outstanding committees; report of nominating committee; election and installation of officers; miscellaneous business.

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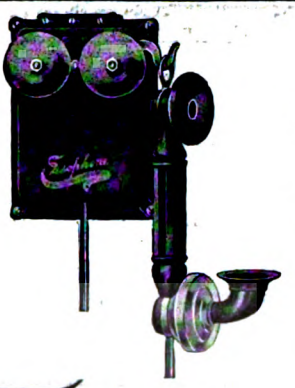

The Exchange Manager sees Lowest Maintenance Cost, Increase in Number of Subscribers, Demand for Hand Telephone.

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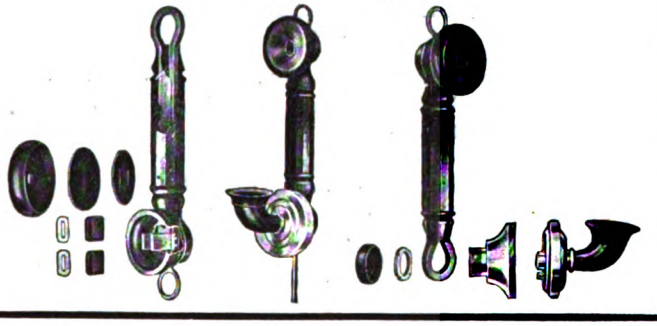

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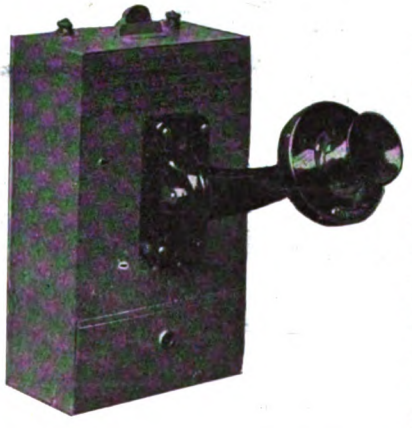

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QUERIES

INSTRUCTIONS FOR MAKING A WIPED JOINT.—(866.)

Please inform me as to the proper way to make a wiped joint in cable splicing.

What to use to clean sheath and prepare it for soldering, also what to use as a soldering flux and way to proceed to solder. F. R., Kansas.

The correct method of procedure in making these joints or splices is as follows:

When the cables are in position and ready for splicing, the ends should be marked at the point to which the lead is to be removed and scored or cut entirely around. This may be accomplished by a plumber's chipping knife and hammer, marking the lead, but being careful not to cut entirely through to the insulation, which might thus be damaged.

The lead is then cut lengthwise from the circular score to the end by the chipping knife and is removed with a pair of pliers. In making this longitudinal cut great care should be used not to injure the insulation. The knife should be held at such an angle as to pass between the lead and the insulation, but not cut the insulation.

When the lead has been removed the parts where it has been scored should be examined carefully and all rough or sharp edges removed. It will be well also to "bell" the lead slightly with the handles of the pliers or some other blunt instrument.

When the lead covers of the two sections of cable have been prepared, as described, the lead sleeve is slipped over the more convenient end and pushed back along the cable far enough to be out of the way. This lead sleeve should be at least as thick as the sheathing of the cable, and in view of its exposed condition may be somewhat heavier to give it greater mechanical strength. Before slipping it on the cable each end of the sleeve is thoroughly scraped with a shave hook or a knife for a length of about two inches, and the cleaned portion thoroughly smeared with some convenient flux, preferably a tallow candle, which, by preventing the formation of the usual film of lead salts, insures a close union of the lead and the wiping metal which is used to make the joint between the sleeve and the cable sheath.

The internal diameter of the sleeve should exceed the external diameter of the lead sheath of the cable by from 1" to 1½", so as to allow for the splicing and paper sleeves.

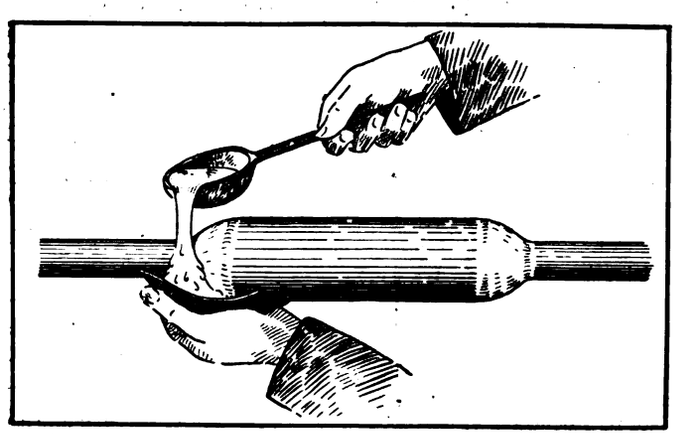

Fig. 866.

After the conductors have been properly spliced, the lead sleeve is brought into position so as to extend equally over the lead on each cable end, and the ends of the sleeve are dressed down close to the lead of the cable, care being exercised to have the lead sleeve concentric with the cable.

The sleeve and the lead of the cable are then joined together by molten solder, as shown in Fig. 866.

The solder is poured on the joint in the manner shown, and is wiped smooth with the cloth wiper, which is usually made of several layers of ticking sewed together in convenient size. The wipes must be absolutely watertight and should be carefully inspected, especially underneath the joint, which may be accomplished by means of a small mirror to insure smoothness, solidity and absence of air-holes, as the presence of small blow-holes in wiped joints causes more trouble than any other feature in cable splicing.

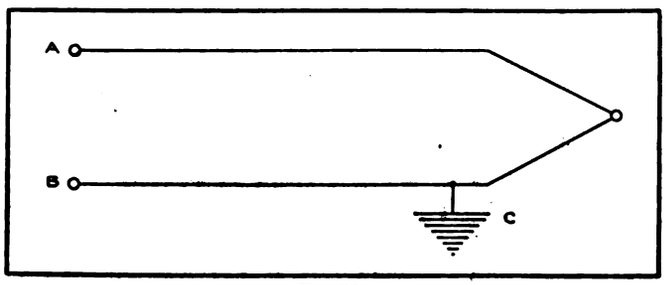

Fig. 867.

TESTING CABLE WIRES.—(867.)

We have a cable in which one wire of a pair is grounded. We have tested for it in the following manner, but have been unable to locate the fault: We measured the resistance of the wire A to ground, having previously connected the two wires at the cable box, and then the resistance of the wire B to ground, thereby expecting to be able to determine the distance by the ratio of the resistance from B to ground, as compared with the resistance of the entire circuit A to B through the cable box.

We find, however, that the resistance of A to ground plus the resistance of B to ground more than equals the resistance of the circuit A to B. We have always been of the opinion that the resistance of the earth is practically nothing and cannot account for the readings we get.

We wish to thank you in advance for the information, which we are sure will set us right. We have been depending upon the JOURNAL for some time now for information which ofttimes we have been unable to secure elsewhere, and wish to thank you for the courteous treatment we have always received at your hands. A. B. I., New York.

If the grounded fault were of practically zero resistance and the connection between the fault and the battery also of zero resistance then your method would apply and the location of the fault would be easy. However, ground connections and faults usually vary, so some method must be used in which the resistance of the fault may be disregarded.

Laving your connections as shown in Fig. 867, we will measure the resistance of the loop A. B. We will then measure the resistances A. C. and B. C., one terminal of your testing instrument being grounded. It is evident that these include the resistance of the fault to ground.

The resistances A. C. and B. C. being added together, subtracting the resistance A. B. will leave twice the resistance of C. Twice the resistance because it has been added in both A. C. and B. C. If now the resistance of C. be subtracted from B. C. it will give the resistance of B. to C. Knowing the resistance of the cable per foot the distance can be determined.

Or we can express it in the following manner:

Take resistance A B = R′
" " A C = R″
" " B C = R‴
B to fault = x ohms.
Then

$$R'' - \frac{R'' + R''' - R'}{2} = x \text{ ohms.}$$

from which the distance may be computed.

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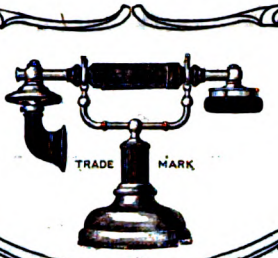

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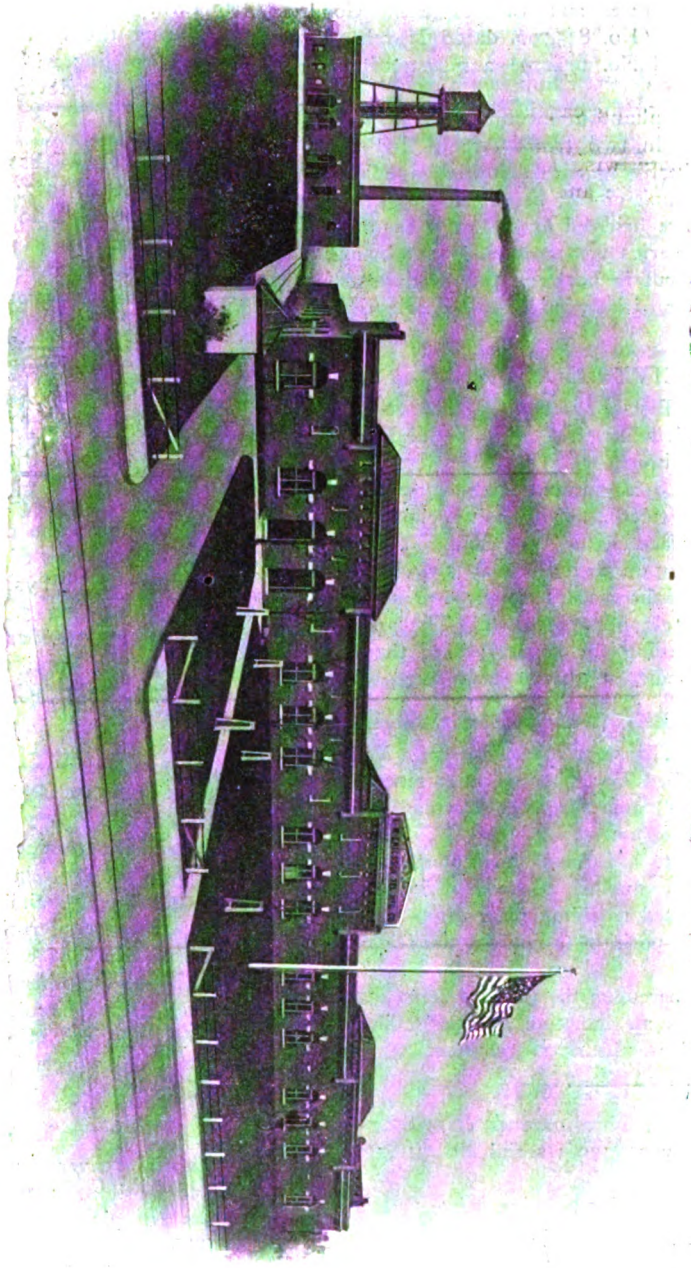

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TELEPHONE PATENTS

PHANTOM CIRCUIT SYSTEM.

Jacob W. Lattig, Wyncote, and Charles Lane Goodrum, Philadelphia, Pa., patent (No. 845,796, dated March 5, 1907; filed March 3, 1904; serial No. 196,279) a system of multiplex telephony.

This patent covers a phantom circuit system in which a third circuit is created in two trunk circuits by means of balancing the lines inductively with suitable impedance coils and condensers, each trunk circuit being used as one side of the phantom. There are bridged across each trunk at each end and connected in series two condensers and an impedance coil. The coil is cut in between the condensers and a tap taken from the center of its winding to the coil to give one side of the third line.

RECEIVER HOLDER.

Mortimer H. Black, Pittsburg, Pa., patents (No. 850,558, dated April 16, 1907; filed March 6, 1907; serial No. 360,876) an attachment for telephones.

This patent covers an arrangement which may be attached to the transmitter of a telephone by being clamped around the outer edge of the face plate. A tubular arm attached to the clamp by pivots upon which it may swing has placed at its other end, at right angles to it, a resilient clasp adapted to embrace a telephone receiver. The apparatus is for the purpose of relieving the subscriber of the necessity of using one hand to support the instrument during conversation.

INTERCOMMUNICATING TELEPHONE.

Stanislaw A. Koltonski, Boston, Mass., patents (No. 846,479; dated March 12, 1907; filed December 9, 1904; renewed March 7, 1906; serial No. 304,781) and assigns to Electric Gas Lighting Co., Boston, Mass., a telephone.

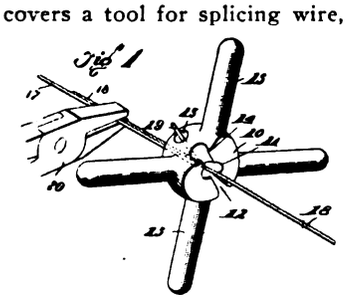
This invention relates to a form of intercommunicating telephone provided with any number of selector buttons, so arranged that when depressed a sliding plate drops over a collar and retains the button in position to connect the telephone with the line desired.

Means are provided whereupon the receiver being placed upon its retaining hook causes an actuation of the locking plate in such a manner as to release the selector buttons.

SPLICING TOOL.

Eli Bowman, Arlington, Ohio, patents (No. 852,216; dated April 30, 1907; filed May 25, 1906; serial No. 318,719) a wire splicer.

This patent covers a tool for splicing wire, and is so con-



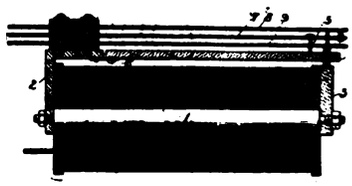
structed as to permit the end 19 of one of the wires 17, 18 to enter into a suitable groove 13, and by revolving the tool thus cause the wire end 19 to form a close fitting coil around the other wire 18. The same operation is applied to each end in turn.

During the first operation the wires 17 and 18 are kept from revolving with the tool by grasping them securely with some suitable device, as the pliers 20.

RELAY.

Harry G. Webster, Chicago, Ill., patents (No. 849,443; dated April 9, 1907; filed January 3, 1905; serial No. 239,486) and assigns to Milo G. Kellogg, Chicago, Ill., a circuit changing mechanism.

This patent covers a form of relay, to the core 1 of which is attached extensions 2 and 3. Switch springs 7, 8, 9 are



mounted upon the core extension 2 and attached to the extension by means of a steel spring 6 in the armature 4. The armature 4 is physically connected to spring 7 by the insulating bushing 5. The action of the switch lies in the movement of the armature 4 which is attracted toward the pole piece 3 upon the energization of the electro magnet, thus opening or closing the point of contact between the switch springs.

A. C. EFFICIENCY BOOSTER.

Isidore Kitsee, Philadelphia, Pa., patents (No. 844,810; dated February 19, 1907; filed July 11, 1903; serial No. 165,155) a method of increasing the efficiency of alternating currents.

This invention relates to an arrangement of a source of alternating current, suitable inductoriums, revolving commutators, and asymmetrical resistances, together in such a manner as to cause one-half of each cycle to flow through one branch of a circuit and the other half of each cycle to flow through a second branch of the circuit, the object being to combine the waning cycle's inductive effect in the transformer with the inductive effect of the cycle in the ascendency so as to produce an induced current of uniform efficiency.

METAL CROSS ARM PIN.

David Weaver, Paterson, New Jersey, patents (No. 851,577, dated April 23, 1907; filed July 7, 1906; serial No. 325,070) a cross arm pin.

This patent covers a metal pin arranged with clips so arranged as to spread below the cross arm when the pin has been driven through so as to guard against unintentional upward movement of the pin, after the wires have been attached, without resorting to the use of nuts and washers, as is the common practice. The entire patent is covered in one claim which is shown in the following:

"A cross arm pin having a shoulder and below said shoulder and spaced therefrom, curved diametrically opposite longitudinal grooves, yielding clips each having both ends in said grooves, and the intermediate portion projecting therefrom so acting with the shoulder to limit the vertical movement of the pin in its cross arm and a rivet extending through said pin and the clips."

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Brief List of Contents

Telephone Instruments, Telephone Lines, Telephone Exchange, Telephone Operation, Automatic Telephone, Wireless Telephony, Magnetism, Measurements, Wiring, Telegraphy, Direct Current Dynamos and Motors, Electric Lighting, Railway Power and Lighting, Arc Lamp Development, Electrical Construction, Management of Dynamos and Motors, Power Station, Alternating Current Machinery, Power Transmission.

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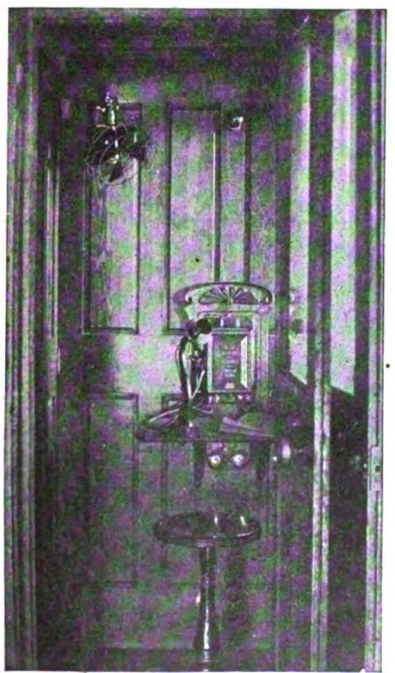

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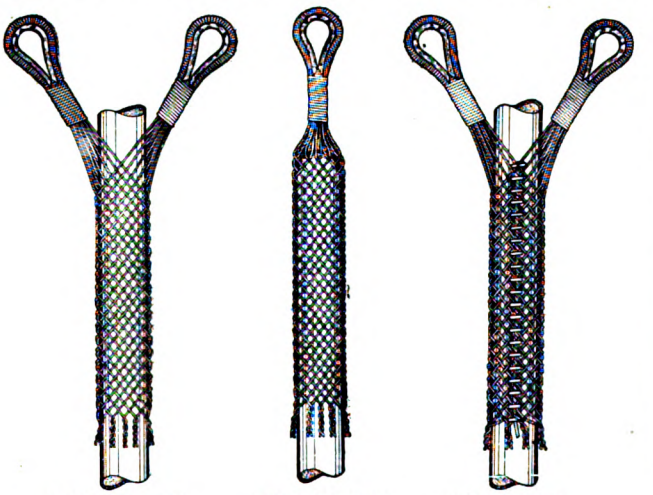

DOUBLE EYE. SINGLE EYE. SPLIT GRIP.

In pulling in underground cables, if there is any water in the duct and the "sling" is fastened to the cable in the customary manner of driving nails through the sheathing, the moisture sometimes enters into the cable so far that it is impossible to "cut back" beyond the trouble.

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IN THE MANUFACTURING FIELD

"SUCCESS LIES IN THE KNOWLEDGE OF OUR TOOLS"

KEYBOARD WIRING FOR DEAN SELECTIVE PARTY LINE RINGING.

AN interesting arrangement of a magnet four-party Harmonic selective ringing key shelf is shown in the accompanying illustration. This key shelf possesses many unique features, the most important being the simplicity in wiring and the use of a complete iron frame construction, the hinges being fastened to the metal work, and the woodwork simply serving to cover the space not occupied by the keys. The latter are attached to this metal framework by machine screws. The simplifying of the wiring is made possible by the use of the Dean selective ringing key, which has its contacts arranged as shown in Fig 1. The plunger springs of these keys, marked 1, 2, 3 and 4, operate the contacts marked 16, 33, 50 and 66. The latter, being the same for each cord circuit, are strapped straight across the key shelf connecting the like springs of all keys. This is a newly developed method of wiring the generator to the cord circuit ringing keys, which the Dean Company has found to prevent generator inductive noise which exists, to a certain extent, where the generator leads are looped from key to key in the same cable with the talking circuits.

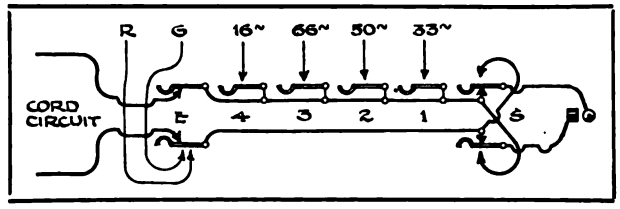

Fig. 1. Simple Dean circuit arrangement used for selective ringing.

The Dean key, used on the key shelf shown in the illustration, has but one spring contact for each plunger, and only two series contacts in the talking circuit, due to the entire four-party key. These two series contacts are located at the front end of the key structure, in plain view when the key shelf is raised, and are therefore completely accessible without removing the key from the shelf.

In the Dean switchboards the generator leads, up to the key wiring, are run with extra heavy insulated wires twisted into a special cable, which is provided with a heavy outer braiding. The generator wires are thus isolated from the talking circuit wires, and all chances for inductive disturbances are minimized.

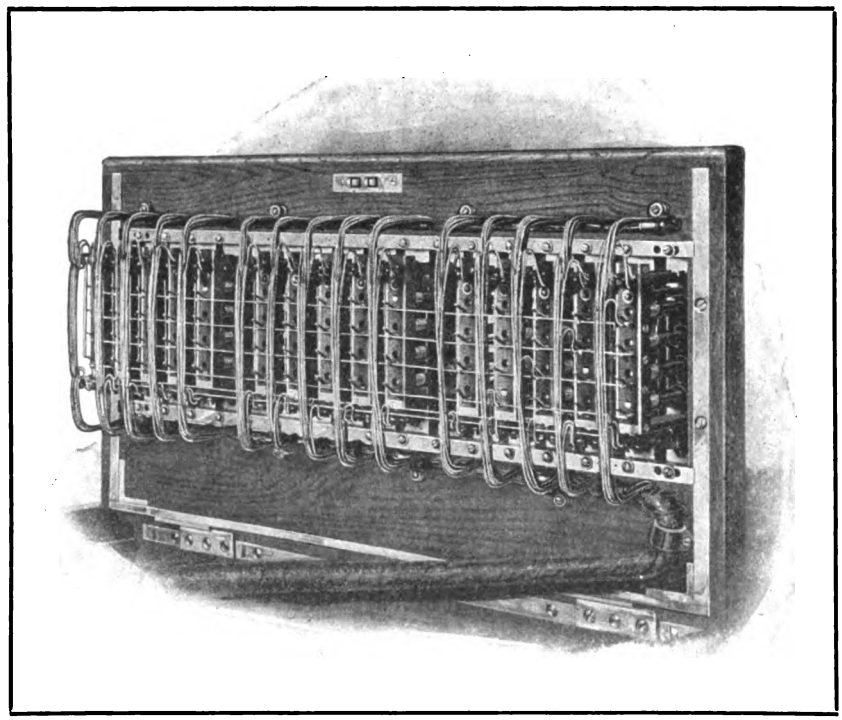

Fig. 2. Keyboard as wired by the Dean company for selective party line ringing.

The party line keys made by the Dean Electric Company are self-contained, each being arranged with four plungers for four-party selective ringing, and when so ordered contain a reversing key, "s," Fig. 1, for eight-party selective ringing.

The escutcheons, which are of genuine Bower-Barff finish, are mounted so that their upper surfaces are flush with the surface of the key shelf, thereby giving a neat and substantial construction without crevices for the collection of dirt and dust.

CHARLES W. FARR, founder and president of Farr Telephone & Construction Supply Company, of Chicago, has resigned the presidency and managership of that company to become the president and manager of a new company, Farr Electric Equipment Co., 170-172 West Adams street, Chicago. The new company will do a general electric supply business, having already secured some good agencies for different lines of electrical goods. This company will manufacture and put on the market the Farr electric deep sea sounding apparatus. The above companies are entirely separate and not connected in any way.

THE CONNECTICUT TELEPHONE ELECTRIC COMPANY, Meriden, Conn., is to break ground within a few days for a new building which will double its capacity. This company has been for a long time engaged in the manufacture of telephones and switches for intercommunicating systems, etc., and is making this addition to take care of the increased demand for its products in this and other lines.

THE CENTURY TELEPHONE CONSTRUCTION Co., Buffalo, N. Y., has just received a contract for furnishing supplies for the system of the Milwaukee Independent Company, at Milwaukee, Wis. Under the terms of the contract a plant operating 15,000 telephones is to be installed by June 1, 1908.

C. H. MACKLIN BECOMES CENTURY SALES MANAGER.

MR. C. H. MACKLIN has associated himself with the Century Telephone Construction Co., in its new plant at Buffalo in the position of sales manager.

Mr. Macklin has a very wide telephone experience, having been in the Independent field for the past twelve years, the last eight years with the Swedish-American Telephone Co.

His wide knowledge of telephone manufacturing and operating especially fit him for his new position. His many friends wish him unlimited success in his new location.

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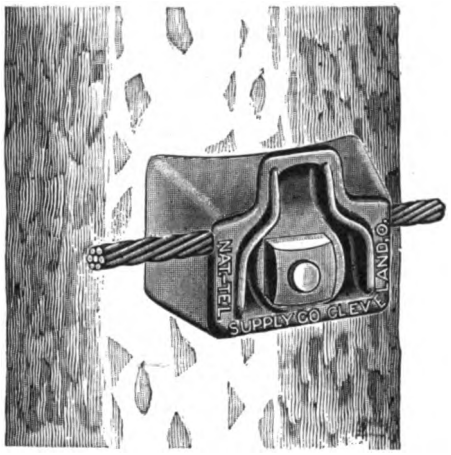

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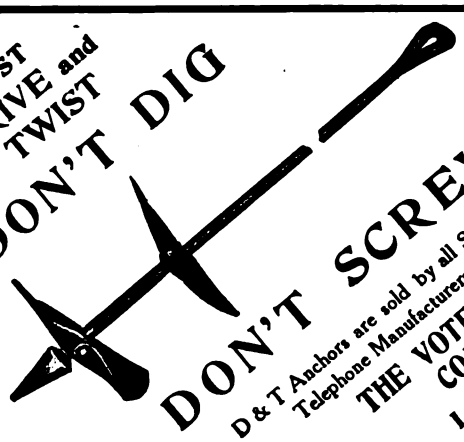

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Form G-90-C.	For City Exchanges, Rentals and Toll Charges separated.
Form G-90-E.	For Small Exchanges, Rentals only.
Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
Form G-90-H.	One subscriber to a sheet; carries account 12 years.
Form G-90-I.	For Small Exchanges; Bound Books; carry 12 subscribers on a page for 1 year.

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THE WEEK'S MESSAGES

NEW COMPANIES.

MOUNT PULASKI, ILL.—The Mount Pulaski Independent Telephone Company has filed articles of incorporation. It has an authorized capital stock of $5,000 and the incorporators are Herman Rentmeister, S. C. Lawson and William Baumann.

GRAYFORD, IND.—The Grayford & San Jacinto Telephone Company has been incorporated with a capital stock of $300, and the following directors elected: A. E. Grimes, D. H. Ziegler and Joseph Rogers.

McCALLSBURG, IA.—The Short Line Telephone Company, McCallsburg, with a capital stock of $5,000 has been incorporated.

READLYN, IA.—Articles of incorporation have been filed by the Readlyn Telephone Company, the incorporators being Wm. Schanewise, Henry Shutte, Fred Diekman, Fred Schoof, H. H. Meyer, Henry Westendorf, Carl Bruns and J. J. Schumacher. The following have been elected as directors of the new company: Fred Schoof, Herman H. Meyer, Henry Westendorf, Carl Bruns and J. J. Schumacher.

REMSEN, IA.—An Independent telephone company, to be known as the Remsen & Meadow Township Telephone Company, has been organized at this city, and is soon to file articles of incorporation. Temporary officers have been elected as follows: August Haack, president; Nic Land, treasurer; J. H. Ahmann, secretary, and these three, with J. A. Johnson and Peter Tjaden, constitute the board of directors.

LAKEVIEW STATION, DULUTH, MINN.—The Lake View Farmers' Mutual Telephone Company has been organized by the farmers of Lakeview.

LIBERAL, MO.—Articles of incorporation have been filed by the Liberal Mutual Telephone Company. It has an authorized capital stock of $2,000, and the incorporators are C. Lipscomb, C. A. Smith, J. G. Todd, A. S. Harvey, J. O. Pinkerton and others.

WESTPLAINS, MO.—An Independent telephone company has been organized whose intention it is to build a line from Siloam to Westplains. The officers of the new company are W. H. Brazier, president; A. J. Noel, secretary and E. A. Wiggs, treasurer.

SHERWOOD, N. D.—The Farmers' Pioneer Telephone Company, of Sherwood, has been incorporated with a capital stock of $25,000. Among the incorporators are E. M. Olson, W. S. Teters, F. J. Meekma, J. H. McFarland, Alex. Schousby and S. Fuller, of Sherwood, and Peter Schiffman of Pleasant, N. D.

PEKIN, N. D.—The Sheyenne Telephone Company, of Pekin, N. D., has been incorporated with a capital stock of $50,000. Among the incorporators are F. W. McDougall, E. A. Olsgard, McVille, N. D.; H. H. Knifel, G. T. Mark.

SILVER CITY, N. M.—The Silver City, El Paso & Southwestern Telephone Company has been incorporated and will at once commence the construction of 325 miles of telephone line, which will connect Silver City with El Paso and a large number of the leading towns in southwestern New Mexico. The organizers of the new company are J. H. Morgan of El Paso; C. B. W. D. Murray, of Central; William Bosworth, of Deming; Clyde Smith, Silver City; W. E. Baker, Las Cruces.

BELMORE, O.—The Belmore Mutual Telephone Company, with a capital stock of $2,500, has been incorporated by G. H. Bach, William Glaser, J. T. Bach, John Myers and John Busheim.

MIDDLETOWN, O.—Articles of incorporation have been filed by the Midldetown Telephone Company. The capital stock is placed at $10,000, and the incorporators are Walter S. Harlan, David B. Bundy Jr., L. T. Palmer, Allen Andrews and L. C. Harlan.

CASHION, OKLA.—An Independent telephone company, to be known as the Spring Creek Telephone, has been organized with a capital stock of $5,000, and the following directors named: A. Cornworth, Geo. W. Segbert and C. C. Cornworth, all of Cashion.

CESTOS, OKLA.—The Independent Telephone Company, of Cestos, with a capital stock of $25,000, has filed articles of incorporation. The incorporators are H. A. Seaton, Moorland, and J. W. Kerns and F. C. Hoyt, of Cestos.

MERIDIAN, OKLA.—The Meridian Rural Telephone Company has been incorporated with a capital stock of $3,000. Among the incorporators are W. M. Allen, W. W. Wickstrew and J. M. Heath.

TIVOLI, OKLA.—Articles of incorporation have been filed by the D. B. Mutual Telephone Company of Tivoli. It has an authorized capital stock of $2,000, and the directors are Alfred Dorsett, of Tivoli; J. L. Porter and J. A. Jones, of Orion.

WATERLOO, OKLA.—The Waterloo Telephone Company, Waterloo, has been incorporated with a capital stock of $500. Among the incorporators are A. S. Reed, A. Maker, J. M. George, A. L. Lynn and others.

PRINEVILLE, OREGON.—The Pioneer Telephone & Telegraph Company has been organized at Prineville and will incorporate with a capital stock of $150,000. The new company is the result of a merger between the Deschutes Telephone Company, of Bend, and the telephone interests of Jack Summers, of Prineville, and has at present about 300 miles of line in Crook county, including lines from Prineville to Madras, Bend, Laidlaw and Lesters, as well as lines up the Ochoco east of Prineville. It is the intention of the Pioneer Telephone & Telegraph Company to build 149 miles of line to Burns, and also to extend a line from Bend south through Silver Lake to a California connection.

STARRUCCA, PA.—The Starrucca Rural Telephone Company has filed articles of incorporation and has elected the following directors: W. H. Travis, of Hale Eddy; George F. Brooker, A. W. Larrabee, E. L. Wagner and S. T. Smith of Starrucca. The new company has an authorized capital stock of $4,500 and it expects to build a line from Deposit, N. Y., to Starrucca, Pa., with connecting lines to places in Broome and Delaware counties, New York State, and Wayne and Susquehanna counties, Pennsylvania.

BENAVIDES, TEXAS.—The Benavides Telephone Company, whose intention it is to construct and operate telephone lines in Nueces, Duval, Webb, Zapata, Starr, Hidalgo and Cameron counties, has filed articles of incorporation. It has an authorized capital stock of $5,000 and the incorporators are Oscar Thompson, Hebbronville; B. B. Wright, Benavides; Frank Clark, Realitos; Milton Dubost, Realitos; John Ball, San Diego; Jose A. Angel, Hebbronville.

LEWISBURG, W. VA.—The Limestone Telephone Company is the name of the new corporation which has recently taken over the plant of the Greenbrier & Organ Cave Telephone Company. The capital stock is given at $25,000, of which $11,000 has been subscribed and $3,666 paid in, and the incorporators are James Laing, E. L. Bell, W. M. Bell, Mason Bell and R. M. Bell, of Lewisburg. The new company intends to construct and operate telephone lines.

HAMBURG, WIS.—The Hamburg Telephone Company, with a capital stock of $3,000, has been organized and the following officers elected: President, Charles Emmerich; vice president, Edward Niemann; secretary, Herman Kreutz; treasurer, Henri Wiedenhoeft. Directors, Anton Emmerich, Gust. Kleinschmidt and Ernst Zielsdorf and the officers.

COQUITLAM, B. C., CAN.—Messrs. Hines and Austin are organizing a new telephone company, which proposes to build a long distance line to connect Chilliwack and Vancouver, B. C.

FRANCHISES.

HELENA, ARK.—Application for a franchise to construct and operate a telephone system in this city has been made by Messrs. Merrifield.

FULTON, KY.—The franchise for the Rural Telephone Company has been purchased by J. D. Kennedy.

ST CLAIR, MO.—The St. Clair & Eastern Telephone Company has been granted permission to build lines in Marine, Alhambra and Pin Oak townships.

FESSENDEN, N. D.—The James River Farmers' Telephone Company has been given permission to erect and maintain a telephone line in this city.

FESSENDEN, N. D.—The petition of the German-Oshkosh Telephone Company to build and maintain a telephone system in Fessenden has been granted.

ELECTIONS.

COMPTON, CAL.—The following officers have been elected by the

NEWS—WANTED

THE matter contained upon the Message and Operating Field pages of this paper is contributed largely by our special correspondents. We believe, however, that there are many valuable items of telephonic interest which are never brought to the attention of the public. There is no reason why this condition should exist, and the Editor, therefore, invites all telephone companies and the officials of such companies, to furnish any information that they can consistently make public relative to financial statistics, new construction, elections, franchises and personal items.

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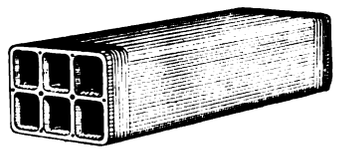

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THE WEEK'S MESSAGES

Compton Home Telephone Company: President, W. L. Frew; vice president, A. W. Miller; secretary, A. J. Shepard; terasurer, W. G. Legg; manager, C. E. Wood.

LOUISVILLE, KY.—The Kentucky Independent Telephone Association at its annual meeting at Louisville elected the following officers: President, M. B. Overly, Louisville; secretary, W. G. Turpin, Henderson; treasurer, J. W. Chambers, Winchester.

JACKSON, MINN.—The new officers of the Jackson Telephone Company are T. H. Stall, president; Noah Ramey, vice president; A. O. Nasby, secretary and treasurer.

NEW ULM, MINN.—The following officers and directors have been elected by the New Ulm Telephone Company: Fred Pfaender, president; Alex. Russell, vice president; F. H. Retzlaff, secretary; H. P. Bastian, treasurer; directors, F. H. Retzlaff, Otto Schell, P. Liesch, J. P. Graff, Fred Pfaender and H. P. Bastian, New Ulm; Martin Schnoberich, Jos. Wiesner, Cottonwood; Fred Rolleff, Herman Pfaender, J. A. Seilner, Alex. Waibel, Fred. Wellner, H. F. Schrader, Julius Schroeder, Fred. Foss, Alex. Russell and John Durbahn.

ALBANY, N. Y.—The Home Telephone Company has elected the following directors: James Moore, T. Henry Dumary, William H. Keeler, Albert Hessberg, E. R. Todt, Howard Hendrickson, Eli M. Woodard, Richard Stephens, S. B. Rawson, I. H. Griswold, T. M. Brush, F. H. Sudro, E. F. Allen, E. E. Williams, H. H. Bender.

AMSTERDAM, N Y.—The following officers and directors were elected by the Amsterdam Automatic Telephone Company: President, Willis Wendell; vice president, W. B. Charles; treasurer, Geo. McClumpha; secretary, Burton Fisher. Directors: Willis Wendell, J. K. Stewart, Geo. McClumpha, W. B. Charles, A. W. Breedon, L. B. Harrower, D. Ostrom, J. T. Sudgen, Burton Fisher, A. R. Conover and Samuel Wallin.

FOND DU LAC, WIS.—The Woodhull Telephone Company has named as its president O. S. Fenner; vice president, R. Porter; secretary, M. B. Stratz; treasurer, Frank Schaefer. Directors: O. S. Fenner, Ralph Porter, M. B. Stratz, Frank Schaefer, C. H. Estabrooks, A. Rausch and J. A. Stratz.

FINANCIAL.

EARL, ARK.—The Earl & Tyronza Telephone & Telegraph Company, of Earl, has increased its capital stock from $5,000 to $10,000.

LA PORTE, IND.—To take care of its new construction work the La Porte Telephone Company has decided to increase its capital stock from $60,000 to $100,000.

GRATIOT, O.—The Gratiot & Brownsville Telephone Company has increased its capital stock from $10,000 to $15,000.

PAYNE, O.—The capital stock of the Payne Home Telephone Company, Payne, has been increased from $15,000 to $25,000.

FARGO, OKLA.—The Blue Ridge Telephone Company, of Fargo, has increased its capital stock from $1,000 to $5,000.

MANKATO, MINN.—The capital stock of the Mankato Telephone Company is to be increased from $100,000 to $150,000.

NEW YORK, N. Y.—The shareholders of the Central & South American Telephone Company, with offices at 66 Broadway, New York, have decided to increase the capital stock from $8,000,000 to $12,000,000. Of the $4,000,000 of new stock, $2,000,000 is to be distributed to stockholders as a 25 per cent. dividend. The remaining $2,000,000 will be issued whenever the directors deem it advisable. It is expected that about $2,000,000 will be expended in the construction of a new cable line to Colon.

PERSONAL.

J. P. BOYLAN has recently accepted the position of superintendent of service with the Home Telephone Company, of Detroit, Mich., having left Cleveland to take up his new duties on May 15th.

HARRY W. JOHNSON has recently been promoted from the position of superintendent of the Indiana division of the Huntingdon & Clearfield Telephone Company to a similar position at Phillipsburg, Pa., which carries greater responsibilities.

C. W. SNOW, electrical engineer, Montreal, Que., has been appointed superintendent of the telephone system at Kenora, Ont.

W. J. STANTON has resigned his position as general superintendent of the Corn Belt Telephone Company, at Waterloo, Ia., to accept the position of sales engineer with the American Electric Telephone Company, of Chicago, Ill. He will, however, continue to act as consulting engineer for the Corn Belt Telephone Company.

W. T. STROMEYER, of Dallas, has accepted the position of manager of the West Texas Telephone Company at Brownwood, Texas.

A. HUGH WHITE has recently been appointed manager of the exchange of the Chicago Telephone Company at Joliet, Ill.

New Construction in the Field

LOS ANGELES, CAL.—The Home Telephone Company is preparing to expend $1,000,000 in improvements in this city. Its entire plant is to be made an all cable distribution system and a great amount of conduit work is planned.

WILDOMAR, CAL.—Lines from Elsinor to Wildomar are to be built by the Home Telephone Company.

BLUFFTON, IND.—It is the intention of the United Telephone Company to make extensive improvements in its system this summer.

FORT WAYNE, IND.—The Home Telephone Company is arranging to make a great many extensions of its rural lines in Allen County.

LAFAYETTE, IND.—The Lafayette Telephone Company has commenced the installation of its new exchange, and the work of placing the cables in conduits will be started at an early date.

COUNCIL BLUFFS, IA.—At a meeting of the directors of the Independent Telephone Company it was resolved to expend $42,000 in new construction work this year.

WASHINGTON, IA.—The plant of the Washington Telephone Company is to be reconstructed, and it is estimated that about $10,000 will be spent in this work.

NEW ORLEANS, LA.—The Independent Telephone Company, which expects to enter Nashville, is soon to commence the construction of its line from Birmingham to New Orleans.

BENZONIA, MICH.—The lines of the Benzie County Telephone Company are being extended throughout Benzie county, and its system otherwise improved.

GRAWN, MICH.—Lines are being constructed in South Grant by the Grawn Rural Telephone Company.

SEBEWAING, MICH.—It is the intention of the Valley Telephone Company to improve its system at this place very materially, making the plant up-to-date in every particular.

ST. PAUL, MINN.—The Tri-State Telephone Company expects to install a new branch exchange in the building for which it recently paid $17,000.

EXCELSIOR SPRINGS, MO.—Many improvements in its plant are being made by the Home Telephone Company.

PALMYRA, MO.—Extensions and improvements are being made by the Palmyra Telephone Company and upon their completion the plant will be up-to-date in every particular.

GIBBON, NEB.—A new switchboard is to be installed by the Home Telephone Company, and its system otherwise improved.

APALACHIN, N. Y.—New lines are being construsted by the Little Meadows Telephone Company in this city.

CLIFTON SPRINGS, N. Y.—The Clifton Springs Rural Telephone Company contemplates the extension of its lines north of the city.

NAPOLEON, O.—The Henry County Mutual Telephone Company, recently organized, expects to build and operate lines in Henry, Lucas, Fulton, Williams, Defiance, Paulding, Putnam, Hancock and Wood counties.

SPRINGTOWN, TEX.—The lines of the Farmers' Telephone Company are to be extended.

SWANTON, VT.—The lines of the Northern Telephone Company are to be extended to West Swanton.

SPOKANE, WASH.—It is the intention of the Northern Pacific Railroad Company to install a private telephone exchange, doing away with the service of the Pacific States Telephone & Telegraph Company. About fourteen lines are to be installed and connections effected with the dispatchers' offices at Pasco, Wash., and Trout Creek, Mont.

GLENWOOD, WIS.—The Glenwood Telephone Company is preparing to build new lines to Forest and Emerald. A number of farmers' lines are to be built and the plant generally improved.

HAMIOTA, MAN., CAN.—The municipality is making arrangements for the construction of a rural telephone system. Address J. H. Houch, Hamiota, Man., Canada.

UNDERGROUND.

MATTOON, ILL.—The Coles County Telephone & Telegraph Company has been given permission to place its wires and cables in conduits in this city.

ROCKWELL CITY, IA.—The wires of the Central Mutual Telephone Company are to be placed underground in the business portion of this city.

LOUISVILLE, KY.—The Home Telephone Company expects to place its wires in conduits in the central portion of Louisville.

DETROIT, MICH.—The Home Telephone Company has applied for permits to lay sixty-six miles of underground wires.

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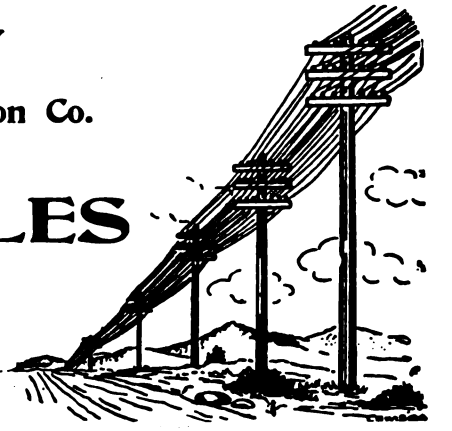

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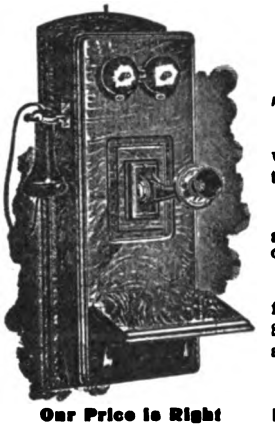

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POLES
20 and 25 foot lengths for rural telephone lines a specialty.
PORTER CEDAR CO., Saginaw, Mich.

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Chestnut, Red Cedar and Cypress
Lengths 16 to 65 feet
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M. LANZ & SONS
Manufacturers of
Square and Round Washers
We Galvanize by the Hot Process
PITTSBURG, PA.

CEDAR POLES
Best Michigan and Idaho stock. Quick shipments if you wish. Also the best Cross Arms of Yellow Pine and Fir; and pins of Locust and Oak. Any size Pins and Brackets. Write for prices and further particulars to
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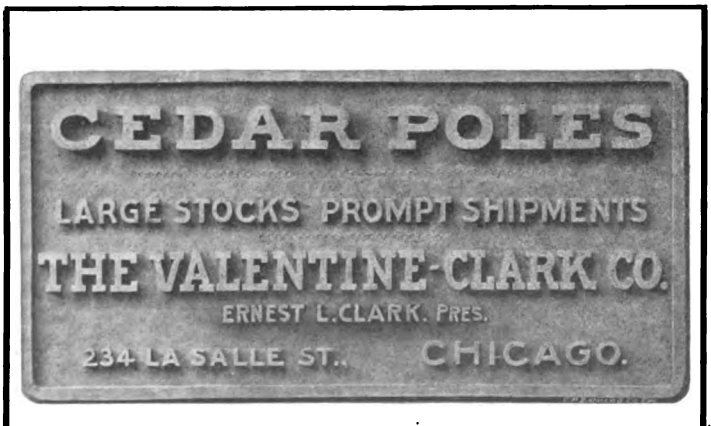

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PRODUCERS AND SHIPPERS OF
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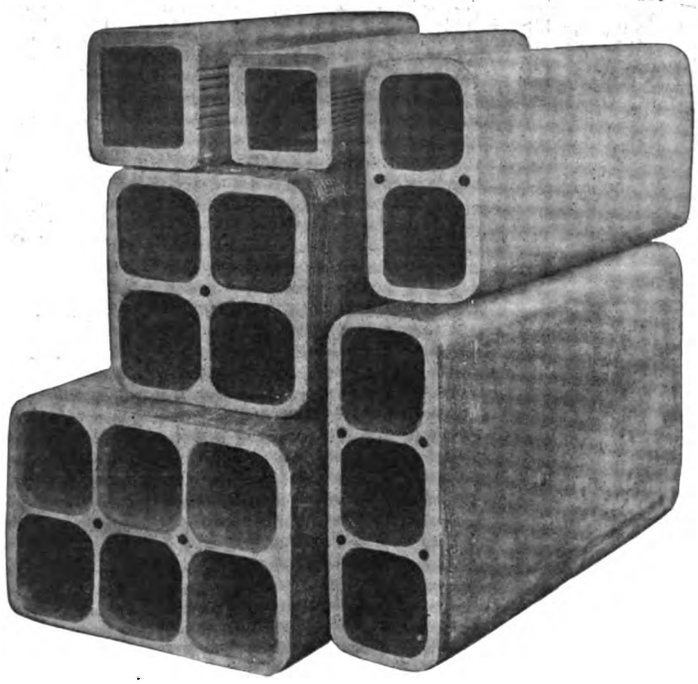
WAY DOWN ROCK-BOTTOM

PRICES

ON

VITRIFIED CLAY CONDUIT



We would like to tell you about it—write us. Cable Specialties and Cable Splicing Tools.

Commercial Electrical Supply Co.

15th STREET, ST. LOUIS, MO.

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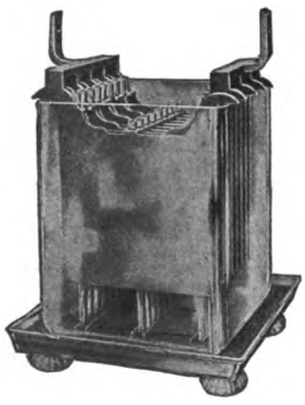
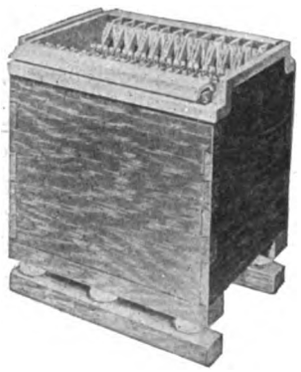
THE GOULD BATTERY PLATE



embodies the most advanced ideas in storage battery invention.

The narrow parallel ribs consti'uting the large contact surface for active material are molded by a special "spinning" process out of a sheet of chemically-pure lead.

The Gould plate is absolutely integral; it possesses remarkably long life with high capacity and efficiency.



WRITE FOR OUR LITERATURE ON TELEPHONE STORAGE BATTERIES

SALES OFFICES **Gould Storage Battery Co.** MAIN OFFICES

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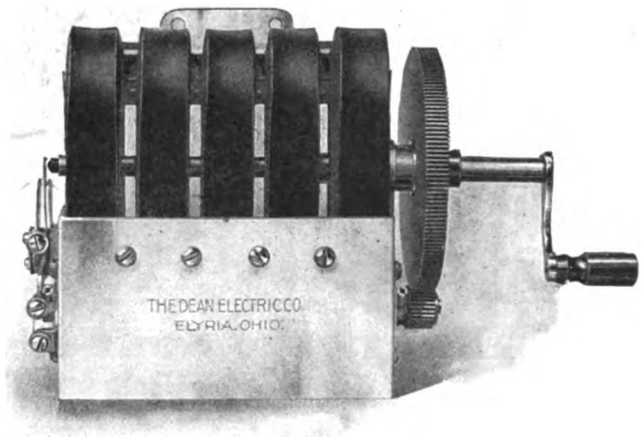
DEAN TELEPHONE APPARATUS

DEAN GENERATORS

BEST DESIGN——CONSTRUCTION——WORKMANSHIP



The best design, selected material and skilled workmanship make our three, four and five bar Dean generators the best on the market. The gear wheels in our machines are stamped and cut out of cold metal thereby avoiding casting defects. Any piece of defective metal is bound to show up during the stamping out and cutting process. We make the gear wheels of brass to prevent rusting and cut each tooth separately making every tooth perfect. The armature framework is built in a very substantial manner and we call especial attention to the very accurate magnetic air gap and the uniform output of our machines. All shunting contacts are platinum pointed, and we furnish, when so ordered, pulsating and direct current generators. We make our own generators and will cheerfully furnish special information regarding them at any time.

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BRANCH OFFICE, Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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"STROMBERG-CARLSON"

CONDENSERS

Standard Capacities—1/2—1—2 MICROFARADS

The capacity specified is guaranteed with an insulation resistance of 100 megohms and not less than 50 megohms per microfarad.

Our method of manufacturing and testing paper and tin foil condensers assures a permanent capacity and insulation resistance as specified.

Illustration shows Condensers Nos. 2-6-9

Condensers of other capacities and sizes than used for regular telephone work furnished on special orders.

Orders in large and small quantities earnestly solicited.

WRITE TODAY FOR NEW PRICES

"Central Energy" Stromberg-Carlson Telephone Mfg. Co. Rochester, N.Y. ··· Chicago, Ill. "Central Energy"

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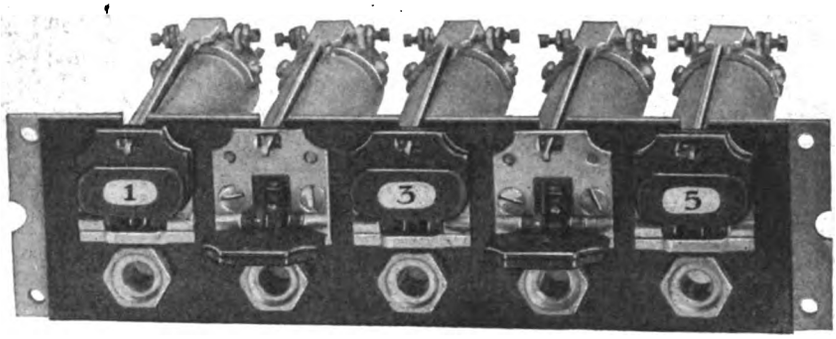
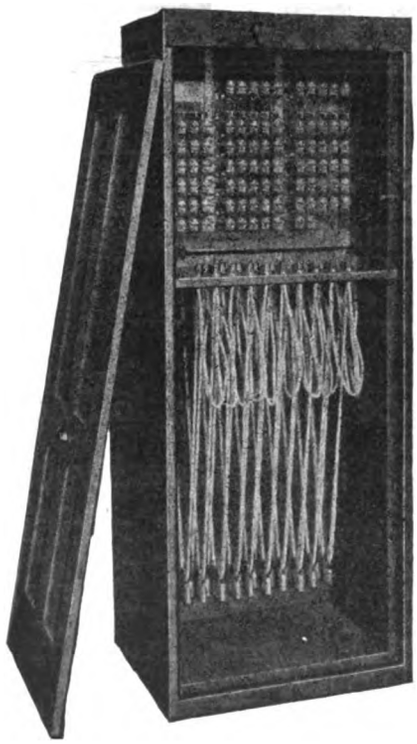
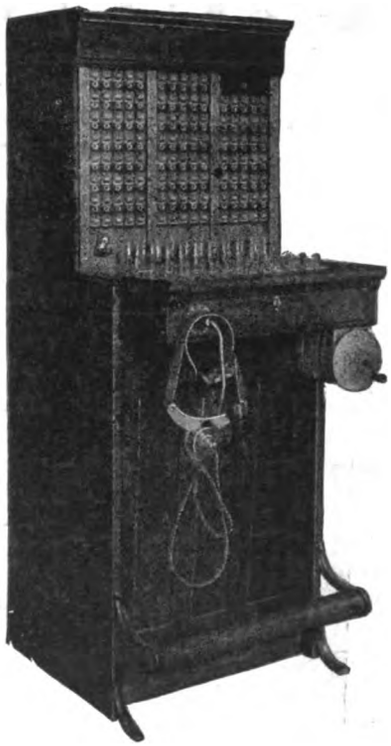


GOOD GOODS

ARMY TYPE SWITCHBOARD





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PLUG RESTORING

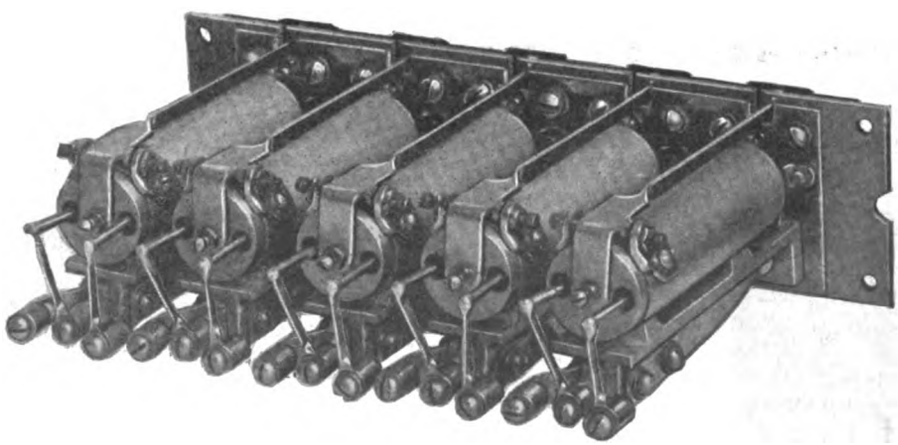
PERFECT IN OPERATION

Platinum Contacts on Night Alarm

Drops and Jacks removed by taking off Jack Face

Sterling Electric Co.

LAFAYETTE, - INDIANA



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100 % GOOD

Our MAGNETO TELEPHONES are excellent for all requirements.

They look well.
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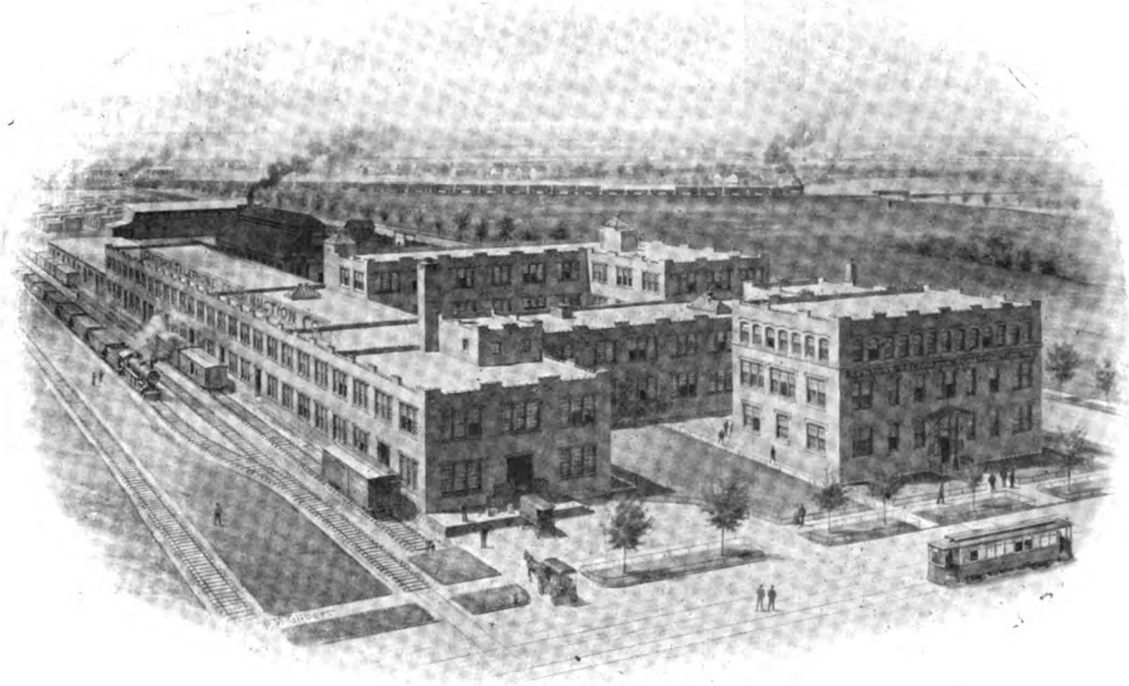
They last well.
They sell well.

The RURAL TELEPHONES are becoming of greater importance every day; and of the thousands sold daily none are more satisfactory than those coming from our new plant.



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BUFFALO, N.Y., U.S.A.

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KELLOGG

TELEPHONE APPARATUS

ALL KELLOGG TELEPHONE PARTS

Are Made From the Best Grades of Material and Are Carefully Assembled by Skilled Workmen, Thus Making Everything High-Grade Throughout

Kellogg Portable Desk Telephone, For Central Battery or Magneto Use.

The tubular hard-rubber covered standard, with hollow brass shell, nickel plated base, is distinctively KELLOGG.

The transmitter hinges at top of standard, and there is mounted in base the hook switch and hard-rubber terminal block for receiver and desk stand cords.

The hook switch is of the toggle joint type, having a long motion of the springs. thus obtaining most excellent contacts with only a minimum motion of hook.

All necessary parts are properly insulated, are easy of access and everything is made as nearly dust proof as possible.

THIS IS WHY

The Standard of Excellence Is Always Maintained By Kellogg Apparatus

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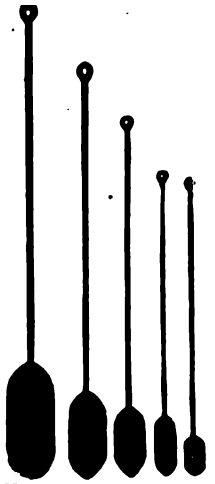
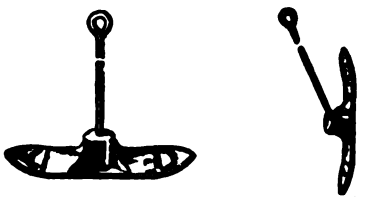




Hercules Anchor

(PATENTED)

The Iron Dead Man

Made in five sizes, from that for 20-foot pole to large one for extremely heavy strains, wrecking trains, etc.

They are the best anchor in every way for holding up heavy leads and round corners. Easy to set, pull against solid earth and will not creep.

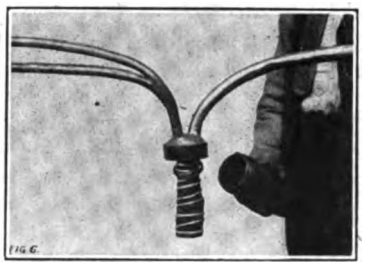
As they are made of Malleable Iron, they are practically indestructible. All anchor plates guaranteed.

Send for descriptive circulars and prices.

Manufactured by

THE W. G. NAGEL ELECTRIC CO.

26-30 ST. CLAIR ST., TOLEDO, O.



TROUBLE!!

When you have found that the trouble in your telephone cable is in a certain joint, it is not necessary to blow the joint or cut the sleeve when you use HARGIS CABLE SPLICING JOINTS. Just take your pair of spanners, unscrew the pot from the ring, unlace the pairs and spread them out like a fan. You can then test the pairs with greater ease than you can with a horizontal wiped joint, on account of the ease in getting at the inside pairs. You don't have to go all over the work again of soldering a seam in your sleeve and wiping the ends of a joint when the repair is made; just screw the pot on the ring and tighten with spanners and you have a perfect joint.

Absolutely moisture proof. Made in three sizes. Costs less on first installation. Saves money while in use. Send in your order to-day.

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MANUFACTURERS OF PATENTED MONEY SAVING SPECIALTIES

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[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE

United States Coin Register Co.

TOLEDO, OHIO

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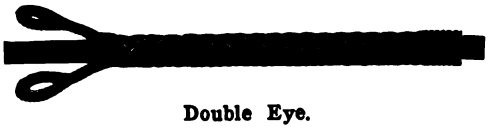
"MUL" Underground Cable Construction Devices

"MUL" CABLE LUBRICATOR

More effective than double the amount of others. Non-corrosive, non-poisonous, odorless. Get Prices.

GEM CABLE GRIPS Saves Its Cost in The First Pull

Single Eye.



Double Eye.

Split Grip Open.

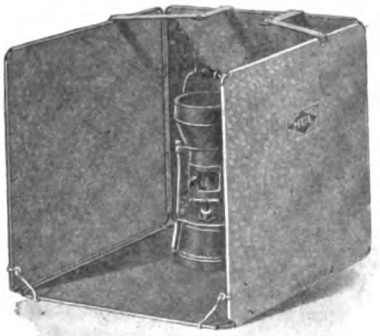
Split Grip Applied.

"PERFECTION" REEL STAND OR JACK

Made on a new principle. The "Nut" Revolves. It is light in weight, but well braced, durable and perfectly adjustable, made entirely of steel. We have two other styles of Reel Jacks, the "Triumph" and the "Ajax," and supply either of two types of head, open top or closed.

MANDREL CONDUIT CLEANER

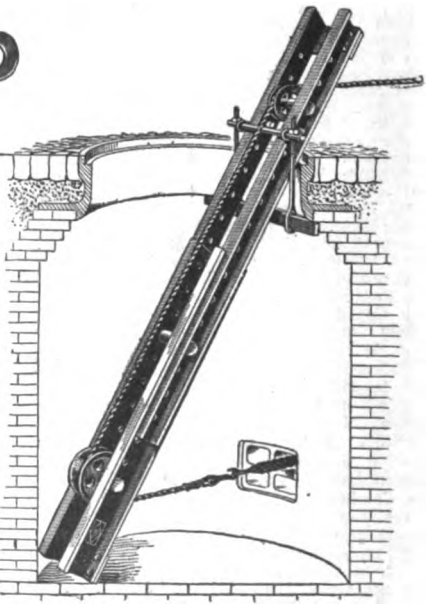
It's flexible, and there is ample room between each leather washer for the dirt.



"PERFECTION" Furnace Protector

MUL

Write for our
New Bulletin-Catalogue Now



"Rigid" Uprights to Carry Sheaves for Leading Out Cables

COLMAN J. MULLIN CO.

430 KENT AVENUE - - - BROOKLYN, N. Y.

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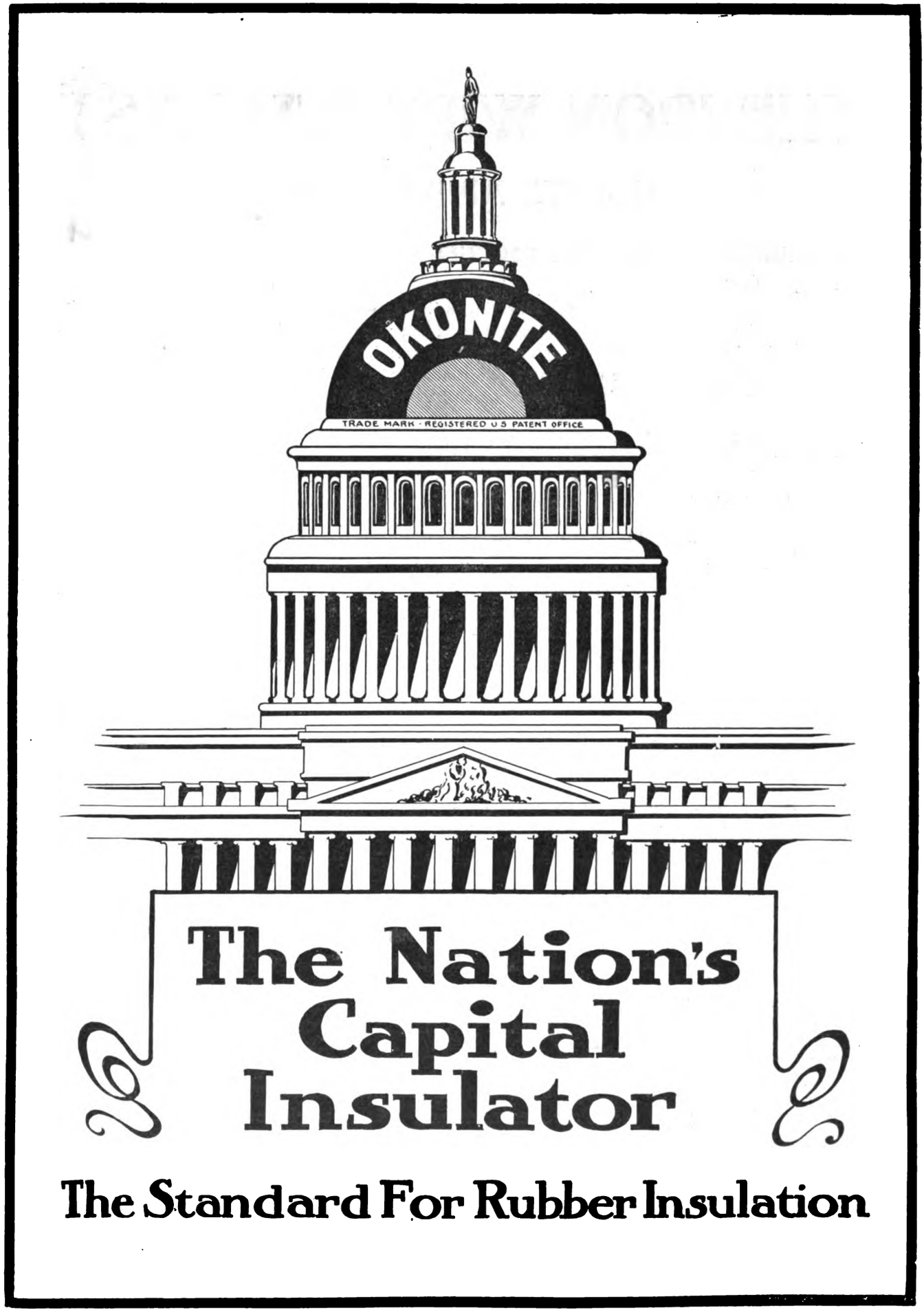

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THE IRON WIRE BALLAST

AND ITS APPLICATIONS

TO SUBSCRIBER'S LINE CIRCUIT

In this application the ballast is placed directly in series with the subscriber's line lamp, central battery and the subscriber's line sub-station set. The ballast protects the line lamp from an over voltage and acts as a self adjusting automatic resistance to maintain constant potential across the lamp terminals. The result is that the line lamp gets the same voltage on a short line that it does on a long line. The ballast line lamp replaces the line circuit relay in common battery switchboards.

TO OPERATOR'S RINGING LEADS

This application of the ballast protects the voltage of the operators when one of them is ringing upon a line that is short circuited. The ballasts for this work are supplied with Edison bases, so that they can replace carbon lamps already in use. Under normal conditions these ballasts will measure about 25 Ohms. However, when the operator rings upon a short circuited line, the resistance of the ballast increases instantaneously to approximately 400 Ohms. The action is as instantaneous as a carbon lamp, and there is no possibility of failure in action.

TO REGULATE CURRENT RECEIVED IN SUBSCRIBERS' TRANSMITTERS

By placing the ballast in the transmitter feed in the exchange and increasing central battery voltage, practically the same transmission qualities are given to telephones located at a distance from the exchange as are given to the transmitters near the exchange. When placed in series with these lines, the ballast regulates the current so that the transmitters will always receive their full amount of current, and none of them can receive current enough to injure them. Hence, the transmitters will talk to their fullest efficiency, irrespective of the distance they are located from the central exchange.

THE VOTE-BERGER COMPANY, La Crosse, Wisconsin, sole owners of The V-B Iron Wire Ballast Patents, are now prepared to make immediate deliveries on ballasts equipped with Edison bases for operator's ringing leads.

A line from you, addressed to Department C, THE VOTE-BERGER COMPANY, La Crosse, Wisconsin, will bring you complete and interesting information regarding this and other applications of the iron wire ballast.

If you are contemplating purchasing a common battery switchboard, do not delay sending in your plans or specifications. Sales engineers of THE VOTE-BERGER COMPANY will call upon you if you desire.

A COMPLETE SECTION OF THE BALLAST MULTIPLE BOARD WILL BE EXHIBITED AT THE ANNUAL CONVENTION, AUDITORIUM HOTEL, CHICAGO. CALL AT PARLOR NO. 614 AND SEE IT.

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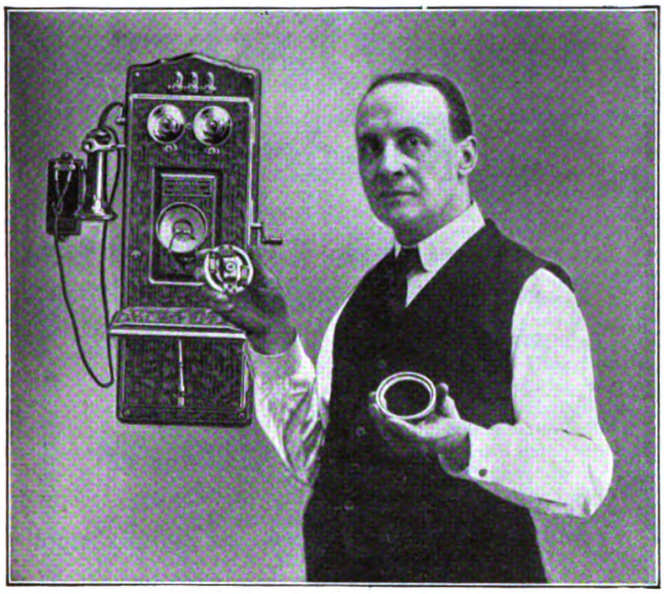
ANDRAE



No Trick at All.

Talks With the Trouble Man

Did you ever take the little screws out of the case of your transmitter and have them drop on the floor, then spend an hour trying to find them and finally give it up in disgust? This never happens with the ANDRAE TRANSMITTER. There are no screws in the case. It is clamped together by a large threaded ring, easily removed and yet firm and positive in its grip. Our transmitter never gets loose or vibrates and its mechanical construction is the best yet produced.

When it comes to talking, this transmitter can't be beat. There is no rattle or jar to it, but just a clear, positive reproduction of the voice. It is made up of imported French carbon granules that never pack.

One of the best illustrations of the workmanship in this transmitter is the fact that it has now been on the market for six (6) years, backed by an unlimited guarantee and the number replaced has not been worth mentioning.

It is like all the rest of the Special Heavy GIANT Bridging Telephone. It is built for business and the harder you work it the better it works. You may try them at our expense.

CONDENSERS

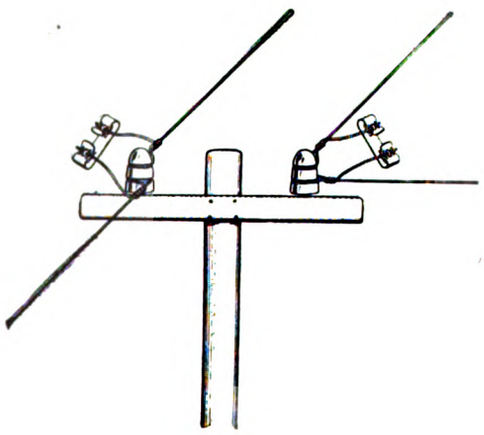
We have been shipping condensers to London and Honolulu since I talked to you last month. This shows that their popularity is spreading in all directions.

Whenever you hear complaints that the bells ring only part of the time, you can make up your mind that the line needs condensers. They will cure this trouble every time. They are so inexpensive and so practical that it is no wonder up-to-date Telephone Systems are adopting them everywhere.

IF YOU HAVE RINGING TROUBLES, TRY CONDENSERS

Don't waste time and money repairing ringers. Don't put it off. DO IT NOW.
You can have one line completely equipped on trial and return them at the end of 30 days at our expense.
WRITE US ABOUT IT TO-DAY!

JULIUS ANDRAE & SONS CO., **Write for Cat. No. 11 and No. 24**
99 W. WATER STREET
MILWAUKEE



FAHNESTOCK TEST OPENER

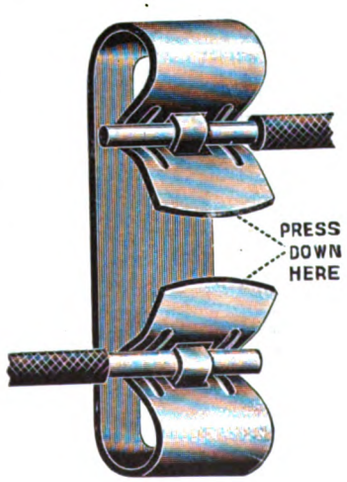
FOR TELEPHONE OR TELEGRAPH LINES

Made for Either Iron or Copper Wires

Grips the wire by the action of a spring. No threads or nuts to corrode.

Line can be opened at any time without tools.

Positive spring contact which insures a good contact at all times. Write us about it.



Fahnestock Electric Co.
129 Patchen Avenue - - BROOKLYN, N. Y.

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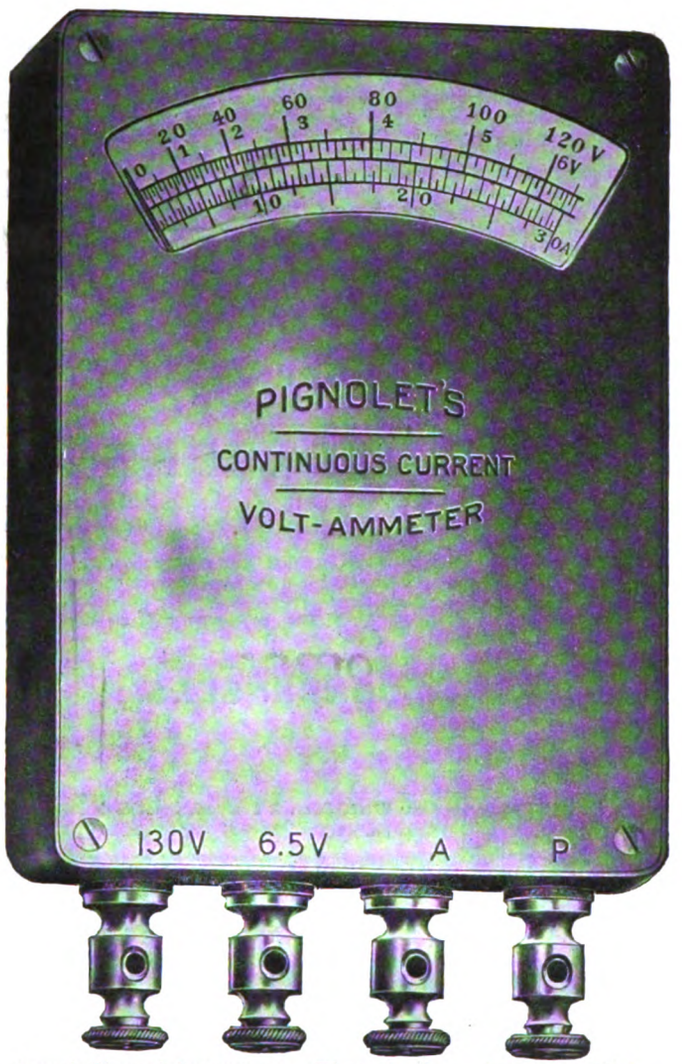

Actual Size of Instrument. Three in One—Ammeter, High and Low Reading Voltmeter.

Every Exchange Needs One

If you use one of our voltmeters once, you will acquire the voltmeter habit and never give it up.

Do You Know

that the instrument shown on the right gives both volt and ampere readings?

That you can use it for the measurement of resistances?

That it is low in price?

That it is accurate?

New Switchboard Instrument.

That our triple scale instruments will measure the voltage of a single cell or that of an electric light main?

That you can measure the resistance of your lines with it?

That you can measure the resistance of your ringers and induction coils with it?

That you can test insulation up to 100,000 ohms with it?

Yet the cost is low and if you write us we will make a price that you can afford to pay.

LOUIS M. PIGNOLET

80 Cortlandt Street, New York

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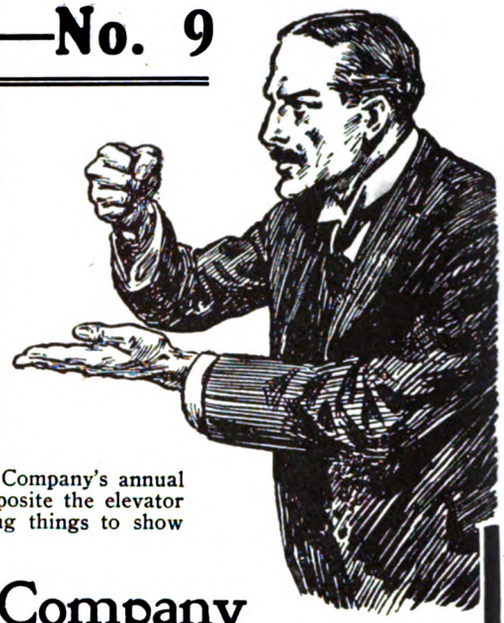
Talks With The Buyer—No. 9



When you have not met a person, you form your ideas of them, which are sometimes changed when you meet them face to face.

Collectively I think you are the most interesting set of men I have ever talked to. Individually, I have met many of you and have not been disappointed. Is there not also curiosity upon your part, to a certain extent? Now, I want you to merge my individuality into that of the house.

Every business concern has its own individuality. They say a corporation has no soul, but it has a heart which beats light or strong with the desires and ambitions of the men who control the destinies of that corporation. If its purposes are right, that corporation may become as good and true a friend of yours as though it were a real person.

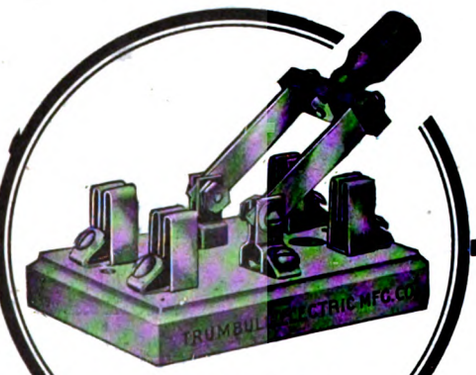
Of course, you are going to attend the International Telephone Convention to be held at the Auditorium Hotel, Chicago, June 4th to 6th. I want to have a chance to meet you and have a little heart-to-heart talk with you. I want you to meet, if you have not already done so, the gentlemen who are at the head of this concern, and let us tell you personally some of the reasons why this Company is occupying a unique position in the telephone field, and should bear a peculiarly intimate relation to your Company's annual dividends. I shall expect to see you then in Room 616, which is right opposite the elevator as you reach the Convention Hall Floor. We will have many interesting things to show you.

Central Telephone & Electric Company

Makers of High-Grade Telephone Apparatus. Dealers in Telephone Supplies (Exclusively)

Main Office and Factory:
2131-37 LUCAS AVE., ST. LOUIS, MO.

120 Liberty Street, New York City
237 Commerce St., Dallas, Texas



WRITE FOR BULLETIN

CLIPS

ON ACCOUNT OF THEIR PECULIAR DESIGN, THE CLIPS SPRING TOWARD THE BLADE AND MAKE A PERFECT SELF-ADJUSTING CONTACT. LOTS OF OTHER POINTS TOLD IN BULLETIN.

RECESSES IN THE BASES HOLD CLIPS FIRMLY AND KEEP THE ALIGNMENT.

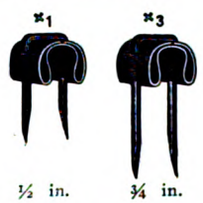
RECESSES

TRUMBULL TELEPHONE SWITCHES

THE TRUMBULL ELECTRIC MFG. CO.

NEW YORK 136 Liberty St. PLAINVILLE, CONN. BOSTON 65-67 Oliver St.

Blake Specialties



½ in. ¾ in.

BLAKE
INSULATED STAPLES

Made in different sizes

Wiring can be done with Blake Staples in one-half the time required for cleat work.

Blake Insulated Staples cost less than the screws alone used with porcelain cleat work.

Good Driving Qualities

Send for Samples

BLAKE
TUBE FLUX SAVES TIME

In that both hands do not have to be used in order to get the soldering flux on a splint and then on the work.

Soldering flux clean and always ready for work.

Always ready for use. The last squeezed out of the tube is as good as the first.

Send for Sample

By Mail, Postpaid, 20c.

BLAKE SIGNAL AND MFG. CO.
246 Summer Street, BOSTON, MASS.

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The Long Hoped-For One Slot Pay Station

IT IS THE LIVERMORE

Tested in the laboratories of leading telephone companies and not a single mechanical or operating defect found.

Only one slot removes all possibility of coins being dropped in the wrong slots. The public is relieved of mental responsibility and physical also because

THE LIVERMORE IS AUTOMATIC

There are no levers to pull or push. Objections to old forms of automatics are overcome by perfected signalling method. Signals are not directly in the path of the coins, but are sounded by the rebound of the coin.

The transmitter is not in metallic contact with the coin chutes. Consequently the rattling of the coins in the chutes does not confuse the operator.

A bell metal resonator is used as a support for the signal gongs, and to this resonator the transmitter is also affixed in metallic contact. Thus loud, clear and distinguishable signals are always given the operator.

Complete description and prices will be furnished every telephone company on application.

LIVERMORE PAY STATION CO.

4 BOWKER STREET - - - - BOSTON, MASS.

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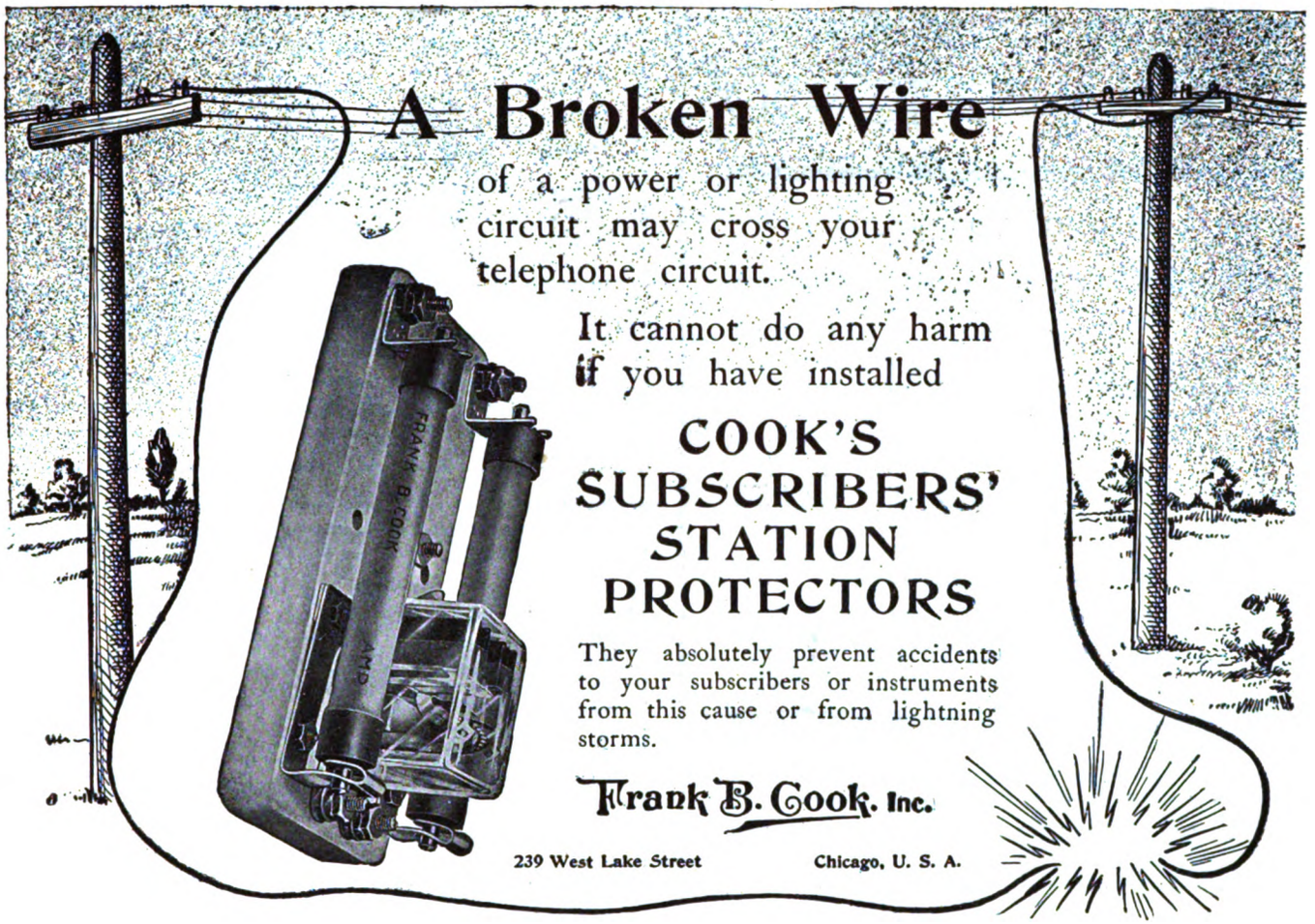

A Broken Wire

of a power or lighting circuit may cross your telephone circuit.

It cannot do any harm if you have installed

COOK'S SUBSCRIBERS' STATION PROTECTORS

They absolutely prevent accidents to your subscribers or instruments from this cause or from lightning storms.

Frank B. Cook. Inc.

239 West Lake Street Chicago, U. S. A.

"It might interest you

to know that the total maintenance expense of parts for our entire plant of 3,000 switches for the past eighteen months has been $10.24," writes Supt. J. A. Duncan, of the Sioux City Telephone Company, Sioux City, Iowa. (This company operates our AUTOMATIC TELEPHONE SYSTEM.)

"A like sum

would perhaps take care of the repair cost on operators' chairs in a manual exchange of the same size," adds Mr. Duncan. (We'll be glad to send you a copy of his letter if you'd like to see it.)

It occurs to us

that the one item of switchboard cords alone for a manual exchange of 3,000 lines would amount to at least $150 in eighteen months. That is fifteen times the cost of all repair parts on the Sioux City automatic exchange.

That is only one

of the many economies of the AUTOMATIC SYSTEM. These economies all help to swell the profits. And—the AUTOMATIC, being the best service, commands the highest rates. Low production cost plus high selling price equals big dividends. That is what led to the adoption of the AUTOMATIC TELEPHONE SYSTEM in the following cities:

Aberdeen, S. D.
Akron, Ohio.
Allentown, Pa.
Auburn, Me.
Auburn, N. Y.
Battle Creek, Mich.
Beaver Falls, Pa.
Bellingham, Wash.
Butte, Mont.
Cadillac, Mich.
Champaign, Ill.
Chicago, Ill.
Cleburne, Texas.
Columbus, Ga.
Columbus, Ohio.
Dayton, Ohio.
Denver, Colo.
El Paso, Texas.
Emaus, Pa.
Fall River, Mass.
Grand Rapids, Mich.
Hastings, Neb.
Havana, Cuba.
Hazleton, Pa.
Holland, Mich.
Hopkinsville, Ky.
Jonesboro, Ark.
Lake Benton, Minn.
Lewiston, Me.
Lincoln, Neb.
Los Angeles, Cal.
Manchester, Iowa.
Marianao, Cuba.
Marion, Ind.
Medford, Wis.
Miamisburg, Ohio.
Mt. Olive, Ill.
New Bedford, Mass.
Oakland, Cal.
Ocean Park, Cal.
Omaha, Neb.
Pentwater, Mich.
Portland, Me.
Portland, Ore.
Princeton, N. J.
Richmond, Ind.
Riverside, Cal.
Rochester, Pa.
Rushville, Ind.
San Diego, Cal.
San Francisco, Cal.
Santa Monica, Cal.
Saskatoon, Sask., Can.
Sioux City, Iowa.
South Bend, Ind.
Spokane, Wash.
Springfield, Mo.
St. Marys, Ohio.
Tacoma, Wash.
Toronto Junction, Can.
Traverse City, Mich.
Urbana, Illinois.
Van Wert, Ohio.
Walla Walla, Wash.
Wausau, Wis.
Westerly, R. I.
Wilmington, Del.
Woodstock, N. B., Can.

AUTOMATIC ELECTRIC COMPANY

VAN BUREN AND MORGAN STS. CHICAGO, U.S. A.

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WHILE IN CHICAGO

GO TO

324 DEARBORN ST., OUR WESTERN BRANCH

and ask for

MR. HENSEL

He Will Show You

"COUCH" AUTOMATIC RESET

Intercommunicating Telephones as arranged for Connection to Exchange Service. It will pay you

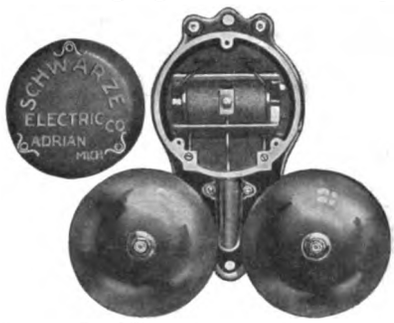
S. H. COUCH CO., INC.

TELEPHONE MANUFACTURERS

156 PURCHASE ST., BOSTON, MASS.

Magneto Loud Ringing Extension Telephone Bells

Gongs 6-inch to 10-inch



All Resistances — All Weather-proof

Efficiency, Durability and Price will interest you.

Schwarze Electric Co., Main Office & Factory, Adrian, Mich.

Branches { Chicago, 324 Dearborn St. St. Louis, Mo., 708 Victoria Bldg. Pittsburg, Renshaw Bldg. San Francisco, 908 Atlas Bldg.

CABLE REEL WHEELS

Anything in the way of pole line hardware for telephone and telegraph construction material.

HALLETT IRON WORKS

92-98 West Polk Street CHICAGO, ILL.

NOT A PARTISAN

THE CALCULAGRAPH

Makes no unjust discriminations between toll patrons. Each patron is treated precisely alike, in that the time of conversation is recorded to the exact second in each case. A Calculagraph record showing the "elapsed" time, which is *automatically computed*, is indisputable evidence of the correctness of the toll charge. Because

IT MAKES NO CLERICAL ERRORS

CALCULAGRAPH COMPANY

1437 JEWELERS' BUILDING, NEW YORK CITY

Agents for Canada: Northern Electric and Manufacturing Co., Ltd., Montreal.

EATS 'EM ALIVE.

No mollycoddle about the *Chapman Lightning Arrester* for Telephone and Telegraph Lines. Explanatory booklet sent free.

H. E. Cobb, Selling Agent,
1501 Monadnock Bldg., Chicago, Ill.

Manufactured by MINNESOTA ELECTRIC CO.,
Minneapolis, Minnesota.

BELDEN MANUFACTURING CO.

MAGNET WIRE TELEPHONE CORDAGE
SWITCHBOARD, JUMPER and ANNUNCIATOR WIRE
ROSIN-CORE SOLDER COTTON SLEEVING
BARE and TINNED COPPER WIRE
GERMAN SILVER WIRE
WINDING MACHINES and REVOLUTION COUNTERS

SEND FOR CATALOG AND PRICES

194 MICHIGAN STREET - - CHICAGO

Please mention THE AMERICAN TELEPHONE JOURNAL when writing to ADVERTISERS.

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VOLUME XV. *SATURDAY, JUNE 1, 1907.* *NUMBER 22.*

CONVENTION PROGRAM

The International Independent Telephone Association, Auditorium Hotel, Chicago, June 3-6, 1907.

JUNE 3—MORNING.

Meeting of Committees on Physical Standards; Standard Forms of Accounting; Standard Operating Rules and Regulations.

JUNE 3—AFTERNOON.

Meeting of Executive Committee. Meeting of Advisory Board.

JUNE 4—MORNING.

Meeting of Committees in charge of details, as follows: arrangements, entertainment, reception, registration, sergeant-at-arms.

JUNE 4—AFTERNOON.

Convention called to order; address of welcome by Hon. F. A. Busse, Mayor of Chicago; response by H. D. Critchfield, Milwaukee, Wis.; president's annual address, Jas. B. Hoge, Cleveland, O.; officers' reports; appointment of committees; Short Talks on Practical Subjects: "Construction Problems," "Shield Advertising," "Collection Methods"; open discussion; question box.

JUNE 4—EVENING.

Outing at Sans Souci Park; free tickets at registration desk.

JUNE 5—MORNING.

Committee Report, Entertainment; written reports of State, Territorial and Provincial associations; general discussion; The Long Distance Business: "How to Handle It," Frank Hart, Pittsburg, Pa.; "Independent Improvements and Possibilities," C. E. Tarte, Grand Rapids, Mich.; "Long Distance Advertising," W. J. Stadelman, Sioux City, Ia.; "The Toll Line Clearing House," J. M. Plaister, Ft. Dodge, Ia.

JUNE 5—AFTERNOON.

Committee Reports: Standard forms of accounting; standard operating rules and regulations; "Lest We Forget," Col. J. D. Powers, Louisville, Ky.; "Compulsory Interconnection of Bell and Independents," J. B. Earle, Waco, Texas; J. Walter Barnes, Fairmont, W. Va.; O. C. Snider, Kansas City, Mo.; "Post Office Telephones and Washington Situation," Chas. E. Sumner, Portland, Ore.; "Telephone Securities as an Investment," W. L. Moellering, Ft. Wayne, Ind.; "Frenzied Finance in the Telephone Field," Dwight E. Sapp, Mt. Vernon, O.; "Where the Copper Comes From," J. S. Haley, Livingston, Mont.

JUNE 5—EVENING.

Informal Banquet, 7:30 P. M., in Banquet Hall, Auditorium Hotel, C. W. Kline, Hazleton, Pa., toastmaster.

JUNE 6—MORNING.

Committee Report: Physical standards; "Rural Telephony—Its Value to the Community and Relation to the Independent Movement," C. H. Schweitzer, La Crosse, Wis.; "Making History in the Canadian Northwest," Francis Dagger, Winnipeg, Man.; "The Strength of the Chain," James S. Brailey, Jr., Toledo, O.; "The Indiana Situation," Chas. S. Norton, Indianapolis, Ind.

JUNE 6—AFTERNOON.

Reports of outstanding committees; report of nominating committee; election and installation of officers; miscellaneous business.

The Era of Solidification

HAVING passed the formative period, the Independent telephone industry has within a comparatively few months begun to assume almost a new character. In the early days the energies of the pioneers were taxed to the utmost to find out how to handle an infinite number of details, and develop their business in the face of strenuous competition.

Now the business is established in hundreds of important centres, and well trained men are available for it.

What remains to be done beyond the upbuilding of the units is to link them together in a firm system of national—yes, and now of international—extent. The determination of standards for construction, getting all companies to adopt uniform methods of operating and accounting, and the development of toll business, are now the principal matters before the Independent telephone men. By their very nature these subjects demand the consideration of an all-including body. They at once represent the coming work of the Association, and show the powerful position attained by Independent companies.

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Managing a Telephone Company's Supply Department

By M. R. Tracy, Storekeeper for the Toledo Home Tel. Co., Toledo, O.

THE storekeeper as a member of the organization of a modern telephone company performs two-fold duties, and he of all others has a right to rebel because he was not born twins. He is, under one head, a warehouse foreman and in addition to his manifold cares coming under this classification must from time to time turn about and become a bookkeeper. As a warehouse foreman he knows his stock, how and where it is procured, how much to carry, the use of each article and where it is kept. As the stock which he must constantly carry in his warehouse frequently includes two or three thousand "samples" and the separate classes of supplies differ greatly in size, shape, material and the amount to be kept on hand, this last is no small task.

Fig. 1. Mr. Tracy at his desk, which is surrounded by neatly arranged cabinets for miscellaneous material.

To get supplies, he issues a requisition upon the Purchasing Department for whatever his judgment tells him he will need for a definite period. The quantity to be carried depends so much upon local conditions that no definite rule could be laid down, or followed. His storeroom capacity may be unreasonably limited so that he could not, if he would, carry an adequate supply of certain articles. Then the work on hand or to be done in the near future must be considered, although the material for any special work is usually provided for in advance by the Engineering Department at the time the job is planned. The records of his office should show him how much of each line of standard material is used in a given period, and then his knowledge of his available space ought to enable him to decide how much to order. Usually he should order at least three months' supply at a time in order that there may be no chance of a slip-up owing to some unexpected demand from one of the departments, or some unanticipated slowness in delivery of a future order, but even this rule must be taken with allowances. Where shipments are known to be quick and the goods are bulky, perishable, or involve a large cash outlay, ordering once a month is allowable. Then in the case of small items of infrequent use and costing but little, a year's supply may well be ordered, as the extra convenience and elimination of work in his department more than make up for the interest on the money thus tied up in idle stock.

The practical work of placing the material in the warehouse where room is limited is a very vexing one, and unless some forethought is used, is never settled. For small articles there is very little doubt that the most convenient arrangement is a series of well designed and neatly arranged cabinets, having drawers which may be subdivided, if necessary for economy of space and making small quantities of various supplies more accessible. The cabinet shown at the left of the writer's desk is the most satisfactory he has found, but even this method of storing must not be carried too far. This cabinet has about seventy drawers, each 8"x10"x24", labeled, numbered and indexed. There is also another smaller cabinet, and another still smaller, shown in Fig. 2, consisting of small tin boxes, 2"x2"x 3½" in size. This latter is used almost exclusively for screws, of which, as is well known, a well assorted stock must be kept on hand by every telephone company.

On the face of each box appears a neat label which indicates the nature of the contents, giving only as much information as is required for identification. The boxes are also numbered and indexed. The indexing is very important as it saves time, and enables the storekeeper to keep track of his stock in a convenient manner. Many of the drawers are subdivided and a convenient way of arranging the practical details of this subdivision is shown in Fig. 3. There one may observe the appearance of one of the learge drawers when opened. Supports are provided on the inside of the drawer for four trays which are so placed that any one of them can be slid out by itself. When slid out it rests upon a support as shown in the illustration, so that there is no necessity for removing the tray from the drawer, nor is there any danger of mixing up the contents by an accident due to careless handling. These trays contain one hundred and thirty-two small tin boxes, each tray being for a separate line of material. One is for insulating bushings only, and contains all the bushings the storekeeper carries in stock, so that a glance will show him where any one article is. Another is for special screws; a third is given up exclusively to small parts for repairing telephones and the fourth is for small private branch exchange and central office switchboard parts. It is very convenient and when closed can not be distinguished from the other drawers. In addition to the cabinets mentioned it has been found desirable to keep a stock of the screws most frequently called for by instrument installers in a special, conveniently located place. In Fig. 7 is shown the

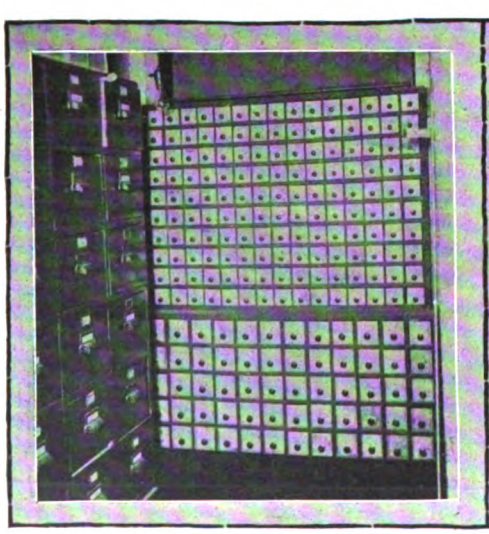

Fig. 2. Cabinet in front is used almost exclusively for small screws. Each box labeled, "¾-8, F. H."; "⅞-4 R. H. Brass," etc.

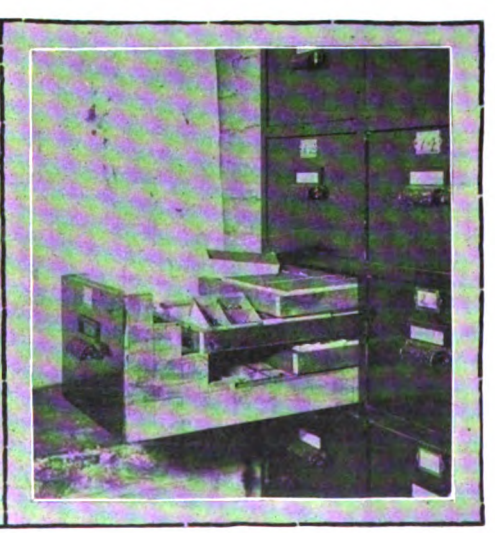

Fig. 3. Tin cases for miscellaneous small articles. Each drawer numbered and labeled. Open drawer shows subdivisions.

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case provided for this purpose, which is located near the door where material is issued. It swings out from beneath the writing shelf. The paper file hanging on the wall above carries records of tools charged to the men.

For telephones and similar material, the writer likes a system of cupboards with doors constructed in the manner shown in Fig. 5.

Coming to that part of the storekeeper's work which may be called bookkeeping it is found that he issues a requisition on the purchasing department for all material needed for his stock. If the order is for material to be used on any especially important piece of work it is well for the storekeeper to keep a carbon copy, but as his original is filed in the office of the purchasing department, where it is accessible to him without difficulty, the decision in each case may properly be left to his option. As soon as the requisition is made out, if it calls for standard material, it should go to the manager for his O. K., and then to the purchasing department. If the material is to be used for some special work the requisition should go first to the superintendent of the department in which it is to be used, and then to the manager. This is a needed safeguard against getting wrong material, through improper description or naming of the apparatus wanted.

Right here is a good place to emphasize the fact that records are for the purpose of *recording* and must be connected, linked like a chain, so that any article that they

Form 36—Franklin—5M—9-28-06

The Toledo Home Telephone Co.

Requisition No.

To Purchasing Department June 19 1906

Please furnish the following:

Quantity	Articles Wanted	
	50000 ft #14 H.D. Copper twin wire	
	R.C. braided and twisted	

M. R. Tracy STOREKEEPER

Approved for Purchase

General Manager

Fig. 4. Sample requisition of Storekeeper on Purchasing Department, made out on regular form, 6⅛ x 4¼ inches in size.

show to have been bought or used can be traced from the time it was ordered to the man who used it. Moreover, the records themselves should show what it was used for, and when it was used. All intermediate records, from the time of the purchase of the article to that of putting it in service should be so arranged as to show what person is responsible for the goods at each stage of their passage, and when this responsibility is transferred.

When the purchaser places his orders he sends carbon copies of them to the storekeeper, who files them in numerical order. Using this in its original form as the beginning of his record, the storekeeper notes on it the details of this transaction which relate to this department, from start to finish.

The very simple system for keeping track of the goods will be clear to one who examines the order reproduced in Fig. 6. As each shipment comes in it is checked, and the date and amount of goods filled in on the blank lines marked by a rubber stamp. The amount of freight on each delivery is written beside the stamp mark, so that all information appears on one paper and no tedious cross-references to records kept in different places are required.

THE AMERICAN TELEPHONE JOURNAL said in May, 1906, that the order reproduced in Fig. 6 was the "largest for cable placed by an Independent telephone company in 1906." It involved a sum of over forty thousand dollars. The Toledo Home Telephone Company generally places an order for five hundred dry batteries or a thousand cross arms at a

PURCHASING DEPARTMENT

The Toledo Home Telephone Co.

231 HURON STREET

COPY

Toledo, Ohio 1/26/ 1906

The J. A. Roebling Sons' Co.,

Cleveland, Ohio.

Please send the following to Toledo O.

54,932 ft. approximately of 300 Pair Cable, #20 B. & S. guage, .09 capacity 1/8" lead, 2% tin

560 ft. 300 Pair Wool Cable, #20 B. & S. Gauge

Freight Received Feb. 10 Received Feb. 15 Received March 11

$66.47 Quantity Checked 37824 ft. Quantity Checked 15276 ft. Quantity Checked 38464 ft.

Freight Received March 14 Received Apr. 11 Freight Received May 2

$55.65 Quantity Checked 29656 ft. Quantity Checked 38464 ft. Quantity Checked 4827 ft.

Received May 15

Quantity Checked 3675 ft.

and oblige Yours truly,

MARK YOUR INVOICE Charge THE TOLEDO HOME TELEPHONE CO.

ORDER NO. No 6397

Purchasing Agent

Fig. 6. Reproduction of Storekeeper's copy of Purchasing Agent's order, after several shipments have been received. Last item, unstamped with storekeeper's name, shows that invoice has not yet come in. Size of form, 8⅛ x 6½ inches.

time to get "quantity price," but has them delivered in small lots. Orders for other material are placed in accordance with the requirements of the department using the goods, and, as previously mentioned, local conditions vary so greatly that it is hardly practical to lay down any general rules as to the amount to be purchased at a time.

It has happened in this office that some of the small lots have been billed when delivered and then, when the order

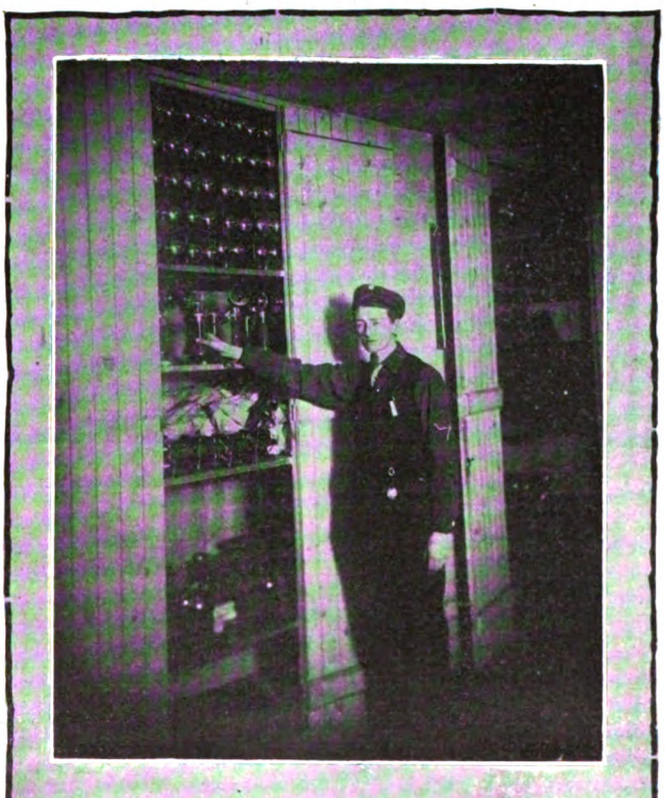

Fig. 5.. Helper A. B. Perman removing telephone from an instrument cupboard in the Toledo storeroom.

was completed, a blanket bill has been sent for the whole amount, thus showing a lack of system on the part of the shipper by billing twice for the same goods. To prevent accidents of this kind, when the writer "O. K.'s" a bill he

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at the same time stamps his name across the proper place on the order, showing the goods have been received. This is then very clearly shown, for each of the separate shipments on the cable order reproduced in Fig. 6, except the last. The stamp is omitted in this item because the invoice was not received with the goods, and had therefore not been passed. Then the auditor's office, by means of a rubber stamp, shows a place on the bill where the storekeeper records the order number, the account to which the material is to be charged, and also a place for the storekeeper to sign as to quantity. These data (Fig. 8), filed in his office, show that the goods are actually in stock, the transaction being thus complete, and his records of it also complete on one paper.

After the bill has been to the storekeeper and received his O. K. in proper form it is incorporated in a voucher by the auditor and filed; later the storekeeper enters upon his "permanent record" card, which will be shown and explained later on in this article, the date, quantity, price, amount of goods and voucher number. With these data the storekeeper can trace any article from the time it was ordered to the time it reached the storeroom. Later on will be

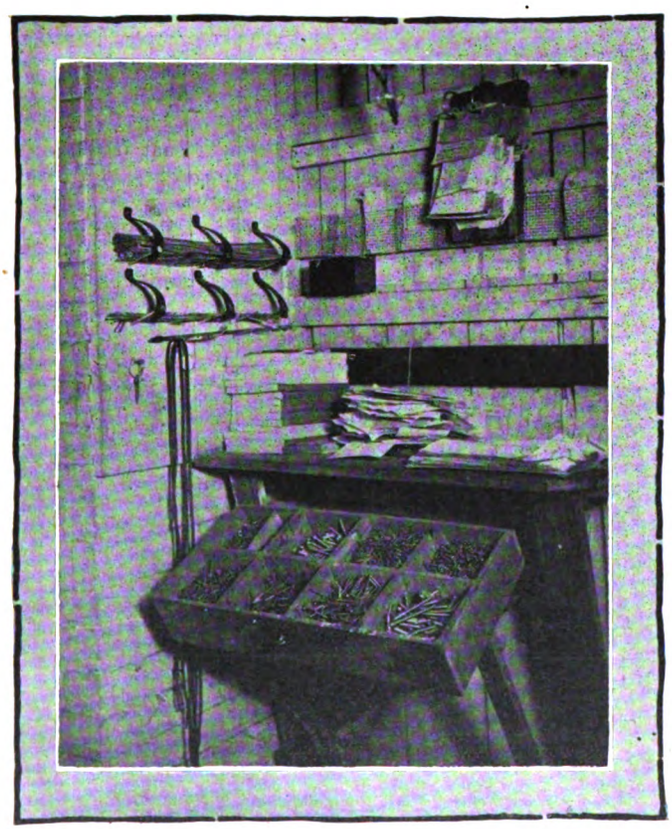
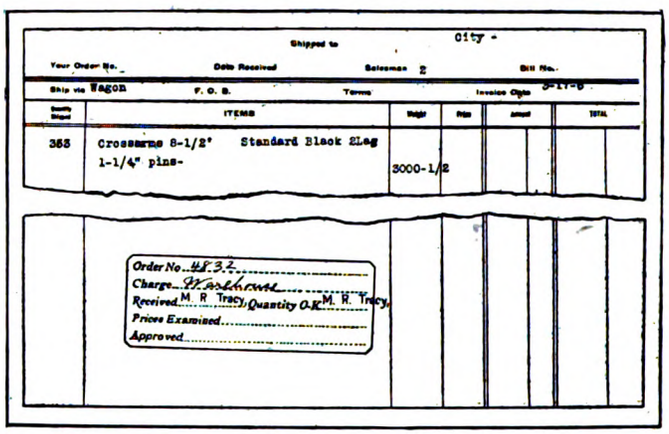


Fig. 7. Swinging case for screws used by installers, and other conveniences in a corner of the Toledo store room.

shown the chain of records for tracing this material to the man who used it and where it was used. At present this article is treating *incoming* material only.

Before dismissing the subject of approving bills, it is well to consider the subject of freight allowance on goods that are supposed to be delivered prepaid. Everyone knows that many firms sell goods "freight prepaid," but ship them "freight collect," and then deduct a "freight allowance" from the invoice. This is all proper if the freight allowance is correct, but does one know that it is, and how is one to make sure of this? A good plan is to note on the carbon copy the amount of freight paid and then compare; or the arrival notice can be filed for reference. The writer prefers the former plan. The record of the amounts of freight on each shipment, it will be noticed, is placed immediately beside the statement of the receipt of the goods on the form shown in Fig. 6. Keep all carbon copies, they never grow old. An instance is recalled where a carbon copy of the purchasing order nearly a year old was very useful.

A very troublesome subject is that of buying tools for



Shipped to City -

Your Order No. Date Received Salesman 2 Bill No.

Ship via Wagon F. O. B. Terms Invoice Date 3-17-6

Quantity Shipped	ITEMS	Weight	Price	Amount	TOTAL
353	Crossarms 8-1/2" Standard Black 2Leg 1-1/4" pins-	3000-1/2			

Order No. 4832
Charge Warehouse
Received M. R. Tracy, Quantity O.K. M. R. Tracy,
Prices Examined
Approved

Fig. 8. Bill bearing Auditor's stamp, with Storekeeper's record.

employees to be paid for by the men on "next pay day." An effective and safe way for the company to handle this is for the storekeeper to issue a requisition on the purchasing department the same as for material for the company, excepting that the requisition reads "For Mr. O. C. Jones," or whoever the man is. Mr. Jones is given the purchasing order and selects the tools, being his own judge of quality and price. As in other cases, the storekeeper receives a carbon copy of the order and it reads "For Mr. Jones." When the invoice comes through the storekeeper, checking it with the carbon copy, notes on the carbon the name of "Mr. Jones." Now, having the invoice and the carbon copy as reminders, he knows how much to charge Mr. Jones, and leaves a bill with the paymaster to put in Mr. Jones's envelope. There is no guessing or depending upon memory.

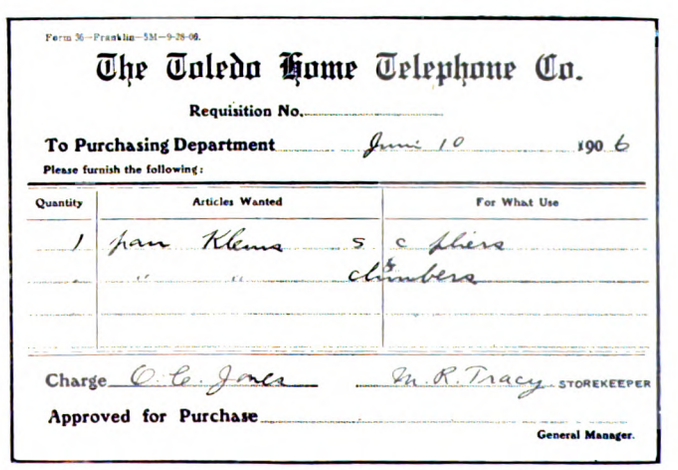
The regular invoice is then passed to the auditor to be paid along with other bills from the same firm. But the company has to provide some tools for men to use in their work, and a proper, permanent record of this material, which is the company's own property, must be kept by the storekeeper.

(*To be continued in issue of June* 18.)

PREVENTING ATTACKS OF CABLE BORING INSECTS.

INTEREST in the subject of damage to telephone cables from the attacks of insects has recently been revived by reports of their appearance in certain sections of California, and in the Chicago stockyards. John Hesketh, electrical engineer in charge of the government telephone system in Australia, who is regarded as an authority on this subject, in a recent letter to AMERICAN TELEPHONE JOURNAL writes as follows:

"Since the date of the article read by me before the St. Louis



Form 36—Franklin—5M—9-28-06.

The Toledo Home Telephone Co.

Requisition No.

To Purchasing Department June 10 1906

Please furnish the following:

Quantity	Articles Wanted	For What Use
1	pan Klems	s c pliers
	" "	climbers

Charge O. C. Jones M. R. Tracy STOREKEEPER

Approved for Purchase

General Manager.

Fig. 9. Sample requisition for tools which are to be purchased by an employee, who will later reimburse the company for their cost.

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Electrical Convention, our experience with the borers has continued pretty much as it was before. We have had trouble in the same districts, although not to the same extent. We have found that when the cables were brushed over with crude vaseline, the insects did not attack the cables. We have, however, found it advisable in the district in which the trouble was most marked to place the cables underground, so that the consideration of the aerial trouble, so far as this place is concerned, has practically disappeared. Of course, it is reasonable to expect that the efficacy of a coating of vaseline as a preventive against the attacks of these insects is determined by the length of time between the renewals of the vaseline. One of this department's officers who has had most experience in connection with this matter, considers that to coat the cables once a year would be sufficient.

"It is to be remembered that insects are most prevalent with us about the beginning of the wet season.

"It is further to be remembered that, as pointed out in my paper referred to, there are several kinds of insects which have a partiality for lead cables, and it is quite possible that the cure in one case would not be efficacious in another."

Developing the Iron Wire Ballast Switchboard

By C. D. Enochs.

ALTHOUGH telephone men have undoubtedly heard considerable in the last year regarding the use of iron wire ballasts in telephone circuits, it is doubtful if many realize that there have been private branch exchange boards of this type in operation for over a year, and that there has also been a main exchange switchboard of this type in operation for about thirteen months.

The village of New Brighton, situated about twelve miles northeast of Minneapolis, consists of approximately three or four hundred inhabitants, and is a busy center for the farming communities in the vicinity. In the last few years it has shown a very commendable spirit of growth, and both in business transacted and in point of inhabitance has proved to be a lively and energetic little city. With the prospect of the stockyards, which for a time have done little business, being revived, it is picking up to even a greater extent, and the telephone business in conjunction with the other business of the city looks promising.

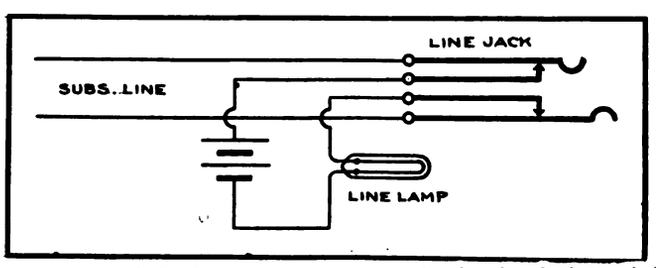

Fig. 1. Type of circuit for common battery calling found to be impractical on account of destruction of lamps.

The first telephone system was installed in New Brighton about six years ago, and consisted of the old magneto type manual restoring drops. About two years ago the manager, Mr. James, rewired his switchboard and telephones, so that the subscribers would get central office signalling and local battery talking service. This was accomplished by means of a passing contact in the telephones and a central battery common to the drops at the exchange. Last spring Mr. James decided that to keep up with the spirit of his village he must give the subscribers full common battery service. With the ordinary common battery systems known to the public this was impracticable, as an exchange with a present capacity of not more than forty lines could not afford the services of a repair man to take care of relay trouble. After considerable time was spent in investigating various types of switchboards, Mr. James found that with the iron wire ballast type of common battery board he could operate a common battery exchange under the conditions existing at New Brighton. The board was put in operation in April, 1906, with a set of dry batteries for power. It has been fully demonstrated to Mr. James's satisfaction that this type of board gives practically no trouble and can be operated economically on dry batteries. In fact, it will be shown in the following discussion of circuits that it is practically impossible for a board of this type to give trouble except from the ordinary wear on the switchboard cords.

In the ordinary common battery switchboard it has been found necessary to employ one or two relays to operate a small signal lamp that indicates to the operator a call is desired. It is self-evident that with all of the battery power located at the exchange, the simplest way to signal the operator would be to have his lamp in series with the exchange battery and subscribers' line. The operation of the subscriber's switch hook would control the opening and closing of this circuit and hence give the subscriber the means of signalling to the operator when a call was desired. The practical objection to this, which is one that until recently was impossible to overcome, was that if the battery voltage was sufficient to send current over a line situated several miles from the office to illuminate the line lamp, this same battery would burn out the line lamps on the subscribers' lines near the exchange. There were attempts at one time to overcome this difficulty by measuring the ohmic resistance of all the subscribers' lines and placing in series with the lamp resistances which would vary for the different lines, and which would make the resistance of all of the lines equal to that of the longest line. If everything worked properly on a system of this kind, it would be operative. However, it was found impracticable for the reason that the lines, which had in themselves a high ohmic resistance, would have no extra resistance added in series. If such a line should be short circuited through any cause near the exchange, or if the "live" (ungrounded) side of this line should be grounded near the exchange, the line lamp would be immediately burned out. An exchange of this type was actually tried by the Bell people in the city of St. Louis, and the result was that lamps were burned out each day, not by the dozen, but by the quart. The way in which the engineers finally overcame this defect in common battery systems was very ingenious and complicated. Instead of placing the line lamps in series with the line, as shown in sketches one and two, they placed the winding of a relay in the line circuit. When the subscriber removed his telephone, current was passed through the winding of this relay, causing it to operate. The operation of the relay would close its contact, thus illuminating the line lamp through the local circuit. Relays could be built which would operate over the lines of various lengths, and as the line lamps were all in local circuits, each received the same amount of current.

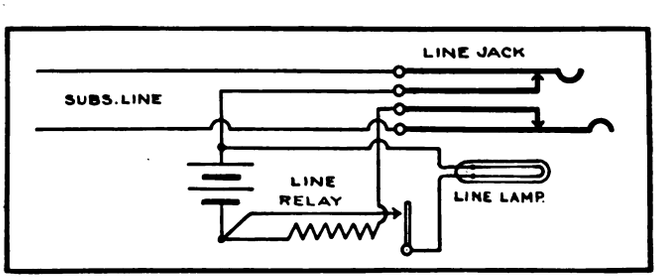

Fig. 2. Early type of line circuit showing method of protecting calling lamp by introducing a relay.

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This, while a great improvement over the first attempts, necessarily introduced a new source of trouble in telephone exchanges; that is, relay adjustments. With the best type of relays possible to build, adjustment trouble is found to be a considerable part of maintenance expense. There are

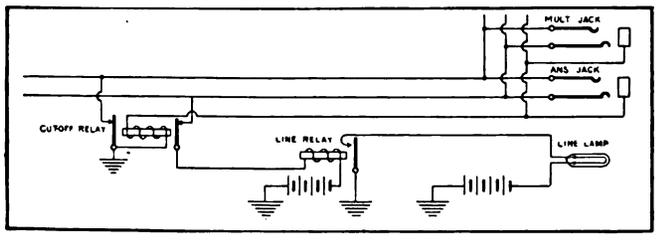

Fig. 3. Common battery circuit for multiple board, with line and cut-off relays.

hundreds of different causes which keep relays from operating, or which cause them to "freeze" when once operated. A relay must of necessity have at least one contact, and this contact becomes dirty from dust, and as the pressure produced by the armature on lines of extreme length is necessarily very light, an extremely small amount of dust will prevent the illumination of the line lamp even though the relay has operated.

Some designers of systems of the common battery type having become used to relays and considering relay trouble an unavoidable part of maintenance expense, added a second relay whose function was to remove the first relay from the line when the operator plugged into the subscriber's line jack. This second relay, which is termed the cut-off relay, brought in itself an increase of relay trouble, and hence maintenance expense. The system, however, was very ingenious, and with the aid of high priced help gave excellent satisfaction. Fig. 3 shows one of the well known circuits of this type, and aside from the maintenance expense it is found quite satisfactory. About a year and a half ago a new system was devised, which refused to consider any of the complications introduced in recent years and went straight back to primary principles. It started on the assumption that the ideal way of having and arranging a line circuit was to place the line lamp in series with the subscribers' lines. As this had been found impracticable only on account of the burning out of line lamps, the question was to protect in a positive manner the line lamp. The solution of this problem was found in the use of iron wire ballast. Iron wire ballast had been used for years in power work and in conjunction with the Nernst lamp. The action in conjunction with the Nernst lamp came the nearest to fulfilling telephone conditions, and deserves some little consideration. An iron wire of .002 inch in diameter is placed in series with the filament of a salt of a rare metal used in the Nernst lamp to protect this filament from fluctuations in voltage. The filament which is used is extremely sensitive to slight

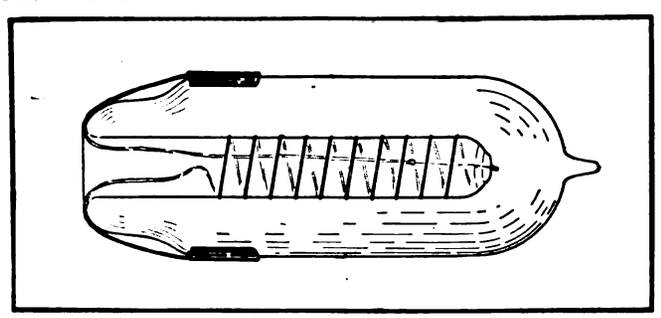

Fig. 4. Arrangement for mounting and protecting iron wire used to ballast telephone line.

variations in current. It has a negative co-efficient which has an extremely sharp curve at the point of best illumination. If placed on a power circuit without precaution a slight increase of voltage will cause an increment of current to be forced through the filament. This reduces the resistance of the filament, which will again allow more current to pass through. The result is that a variation of one and a half volts on a one hundred and ten volt circuit will burn out a Nernst lamp instantaneously unless the filament is protected. After a great deal of experimenting, the ballast already mentioned was designed and found to protect absolutely this extremely sensitive filament. As used by the Nernst Lamp Company, the iron wire is spiraled and held between porcelain discs, the whole being sealed in a glass bulb filled with hydrogen gas. For the purposes of the Nernst lamps, this ballast seems to leave nothing to be desired. With a variation of less than 10 per cent in current, the resistance of the ballast is increased or decreased 100 per cent, which will fully protect the illuminating filament.

When it was attempted to apply this same ballast to a telephone line, it was found that it failed for two reasons. First, the iron wire, on account of the presence of the hydrogen gas, radiated the heat so quickly that a current of .4 of an ampere was needed to heat it to a sufficient temperature for illumination. It is, of course, impracticable to send such a current out over a subscriber's line and impracticable to use such a current in a subscriber's lamp. The second reason for failure of this type of ballast was that a variation of 100 per cent was found to be insufficient to take care of the varying lengths of subscribers' lines. It was thought at first that this 100 per cent range could be easily increased by heating the wire to a higher temperature if the first objection could be overcome. Experiment proved, however, that when a ballast of this type was heated to a higher

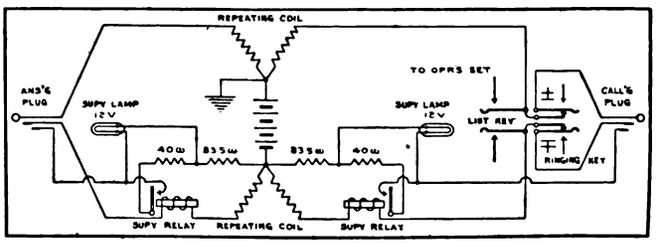

Fig. 5. One of the well-known types of cord circuits used with common battery relay line circuits.

temperature than it was designed to withstand, the wire became soft and the light spiral coils would collapse and pull apart from their own weight.

After considerable time was spent in both theoretical and practical investigation, it was found that if a wire .001 of an inch in diameter were sealed in a vacuum, it could be brought to the operating point by .07 of an ampere, which is normal current for a telephone signal lamp. Also, it was established that this current is easily sent over subscribers' lines of any practical length.

The next question to be solved was a means of mounting this wire so as to allow it to be heated to a high temperature, thus giving a greater range of variation of resistance. This was the hardest part of the problem, and was finally solved by the design of a ballast mount, as illustrated in Fig. 4. The inner tube of the ballast has a deep thread cut into the glass. The bottom and sides of this thread are purposely roughened. The fine iron wire is then wound in the thread and the whole sealed in the outer bulb, in which a vacuum is maintained. With a ballast of this style the wire is supported throughout its whole length, but on account of the roughness of the thread does not lie in intimate contact with the glass. In such a ballast the wire may be heated to so high a temperature that it becomes red and soft. The only result is that it droops down against the sides of the thread and remains thus supported. It is impossible for it to break of its own weight, as is the case with the Nernst type of ballast. After the perfecting of this piece of apparatus, it was found that a ballast was obtained that would give a variation of 1,000 per cent in its resistance with very slight increase of current. This, of course, is more than is needed

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to offset the variation between the resistance of any practical telephone lines to subscribers' stations. With the question of the ballast solved, the line circuit was complete. The ballast line lamp, subscriber's line and power are all placed in series, as shown in Fig. 6. The ballasts for all subscribers' lines are exactly alike, no difference being made in long or short lines. The voltage of the battery is such that on a long line the current sent over the subscriber's line is sufficient to illuminate the line lamp. In this instance the ballast remains cold. When the ballast is in a subscriber's line of zero, or approximately zero resistance, the increment of current that is added on account of the difference in resistance of the lines is sufficient to increase the resistance of the line ballast approximately 700 per cent. On all commercial lengths of lines this means that the line lamp gets practically the same current, whether the subscriber's telephone is located in the exchange building or several miles distant.

With a line circuit thus doing away with all relays, it was decided that if the relays ordinarily used in the cord circuits were still employed, the battle would be only half won. One of the simplest cord circuits in operation up to this time is shown in Fig. 5. This contains only one relay, whose operation shunts out the operator's disconnect signal when a subscriber is talking. This relay, however, is subject to the same adjustment trouble as are the line and cut-off relays.

It took considerable time and trouble to design a supervisory circuit without a relay. The final design, however, was so absurdly simple that it appears as though it would have been the first idea to have been thought of. When an

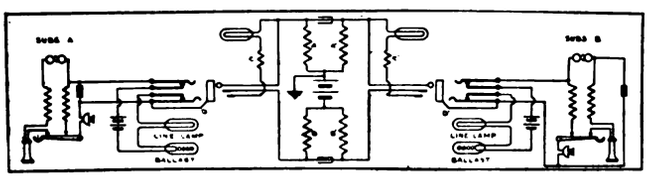

Fig. 6. Arrangement of circuits for connecting two subscribers through the board using iron wire ballasted signalling circuits.

operator's plug is inserted in a line jack, and the subscriber's telephone is removed from the hook, we have battery flowing through the cord to the subscriber's telephone and jack. If we place across this cord a signal lamp and an impedance coil to prevent the loss of voice currents, and design the resistance of the battery feed coils, the resistance of the lamp, and impedance correctly, it is evident that the subscriber's line loop will form a shunt on the supervisory lamp. If this supervisory lamp circuit is of sufficiently high resistance, it is evident that the resistance of the longest subscriber's line in practical use will be low enough to shunt out the supervisory lamp. When the subscriber's telephone is hung upon the hook the shunt is removed and the lamp receives its full current, giving the disconnect signal.

A combination of this circuit with the line circuit already described gives a switchboard of great simplicity. It will be seen that there are not only no moving parts anywhere in the system, but there are no contacts except where the signal lamp is cut off at the jack by the insertion of the plug. Moreover, for large exchange work, where a multiple is desired, the line circuit has been so modified in conjunction with the cord circuit that these contacts are done away with. In the larger boards there are absolutely no contacts whatever, except between the tip and ring of the plug and tip spring and ring spring of the jack. Any exchange man will realize the full significance of these simple facts. There can be no maintenance expense where there is nothing to adjust and no contacts to take care of.

In the case of the New Brighton exchange, where the power comes from dry cells, contacts in the keys are utilized to control the battery to the operator's transmitter, so that unless a connection is up and the subscriber is using the battery, or the operator's key is thrown to a listening position, no current whatever can be wasted. The result, as indicated by Mr. James's experience, is that for small exchanges that are not too busy, dry batteries, in conjunction with this type of board, are perfectly satisfactory. For the easier understanding of the combination of the line and cord circuits, they are printed together in Fig. 6, and the operation

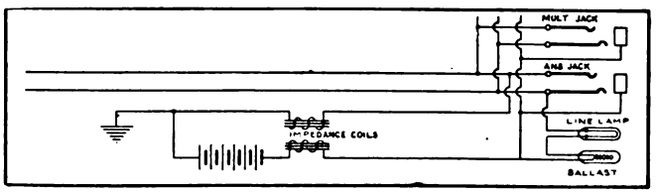

Fig. 7. Line circuit for multiple board, iron wire ballast type, without cut-off jacks.

is as follows: Subscriber A desires to talk with subscriber B. A removes his telephone and battery flows through the following circuit: Positive side of battery flows through the tact of jack to subscriber's line, through subscriber's instrument back on the second side of line to the second cut-off contact of jack through line signal lamp, through line ballast to battery.

Now the operator, seeing the illumination of the line lamp, places the answering plug in the jack corresponding to subscriber A's line. The insertion of the plug lifts the tip and ring spring from the cut-off contacts, hence removes battery lamp and ballast from the line. Battery for the subscriber's transmitter then flows from grounded side of battery through impedance coil A, through the key contacts, through the tip of the plug, tip spring of jack, subscriber's line, subscriber's instrument, second side of subscriber's line, to ring spring of jack, ring of plug, contact of key and impedance coil B to battery. The supervisory lamp, which is permanently attached to the tip of the plug, is connected through the impedance coil C to the sleeve of the plug. When the plug is inserted in the jack the sleeve of the plug is connected to the ring by the wire D in the line jack. As a subscriber's instrument shunts this supervisory lamp and impedance coil, the lamp is dark. The operator learns by inquiry that subscriber A desires to communicate with subscriber B and inserts the connecting plug into the line jack corresponding to the line of subscriber B and rings. Until B answers, we have battery flowing from grounded battery through impedance coil A', through key contact, tip of plug, through supervisory lamp, impedance coil C', sleeve of plug, sleeve of jack, ring spring of jack to ring of plug through contact of key impedance coil B' to battery. As this supervisory lamp has no shunt, it is illuminated, and when subscriber B takes his telephone from the hook and answers to the ring, the resistance of his line, including his set, shunts out the supervisory lamp. Both lamps then remain dark until the subscribers are through talking, when

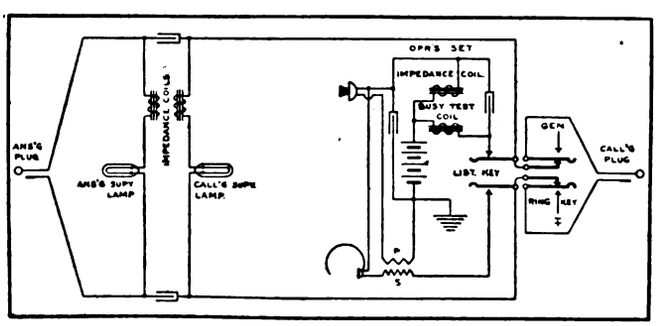

Fig. 8. Cord circuit for multiple board used with line circuit having no cut-off jacks, showing wiring of operator's set.

each lamp will be illuminated by the act of the subscribers hanging up their telephones, which removes the shunts from the corresponding supervisory signals, giving a disconnect signal to the operator.

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As Things Look to the Editor

SETTING THE PACE.

ASK any Independent telephone man you please, on his return from a state convention, what subject came in for the greatest share of real attention, and you will probably get just one answer. That will be: "Building up the toll business." It is only within a comparatively short time that these men have come to realize that there was any chance to enter this field. There has been enough building from town to town to make a series of short trunk lines that, end to end, would stretch far enough to delight any person who can get a little pleasure from reeling off statistics. These statistical connections, however, never produce very heavy dividends. It is the kind of toll lines that people can talk over, and hear over, that pay. Having watched for some time the few thousand miles of such lines which are now at their disposal, and seen what good things they are to have, everyone has begun to feel a very urgent and lively desire for more and the best men in the field are now working diligently to get them built.

Before the companies were cemented together in firmly organized state associations, anything like a definite general movement in the line of improving long distance facilities seems to have been impossible. If it were desirable to do so, it would not be difficult to trace the reasons for this condition—such as the lack of that personal acquaintance which would inspire the necessary business confidence between possible associates, great lack of uniformity in equipment and methods of operating, lack of men sufficiently trained and experienced to view a whole field and determine its needs, lack of knowledge of proper mthods of handling interchanged business, and many other things.

As far as personal difficulties are concerned, the value of the work of state associations has by this time, in nearly all important sections of the country, made the men in charge of the affairs of the different companies familiar, in a general way, with the entire situation in a considerable territory surrounding the places in which they operate. They are thus in a position to judge of the needs of their subscribers, and to estimate the amount of communication which their business transactions would lead them to conduct by telephone with the places which may be put at their disposal. In other words, these telephone men know where toll lines should be built to be profitable, so far as conditions in other businesses than their own are concerned, and they know where local telephone systems have been sufficiently developed to furnish adequate connections to make them profitable feeders to a toll system. Of course, it has taken time to reach this condition, but even in the states which received a comparatively slow start in the upbuilding of Independent local systems, and telephone organization, this point seems at present to have been reached. They are in a position to profit by the knowledge gained in a few States which already have comprehensive toll systems.

With the needs of their territories, and prospects of a better paying business than exists under present conditions settled in their minds, it is only natural that they should be anxious to proceed to actual building at the earliest possible date. The principal obstructions in the way now, aside from the financial requirements, are lack of physical harmony which exists among the plants, and the lack of harmony in ideas as to standards of construction. In other words, it has come down to a simple engineering proposition.

It would be impracticable, and a very slow process, for a state association, for example, to engage an engineer to make a preliminary study of local conditions in each plant of the state, and plan for putting each system in the best possible position to co-operate with toll lines when they are finally built. He could only assume advisory duties, and his recommendations would not be backed by authority to carry any proposed changes into effect. It is for the managers themselves to take up the local questions which such a man would naturally consider, and see that by the time the long distance lines are built their exchanges are ready to handle calls with a minimum amount of trouble.

When modern standard switchboards and telephones are in use, the outside plant will require the most attention, and maintenance and construction factors become of the highest importance. Wire and cable for distribution need to be chosen and placed with the greatest care, in order that insulation may be kept up without effort on the part of the exchange forces after the lines have been built for some time, and a proper standard of transmission maintained. Methods of construction and instrument installation deserve also special care. When the toll lines are built, the companies with their plants in best condition from these standpoints of construction and maintenance will be in a good position to reap the reward from the start, while others will suffer a handicap which will be difficult to overcome, and may produce an undesirable effect upon the popular reputation of the entire toll service.

SPECIAL DIRECTORY SERVICE.

CARRYING out the idea of making the telephone directory a saver of time and effort to subscribers is in line with the whole purpose of telephone service. It therefore seems to be a highly legitimate field for the careful attention of the manager desirous of making his service of the highest value to the public. In cities where telephone development is high it is seldom indeed that a business man refers to a general directory, such as was formerly to be found in the office of every important firm. If a directory is kept at all, it is a classified directory of business houses; but for looking up addresses of known houses the telephone directory has come to be the natural book of reference. With a classified list of business firms included in this book as a supplement, the usefulness of any other directory seems almost to have passed away, and as telephone development becomes greater this will be more and more noticeable.

Of course, a natural question which will be asked is, "How is it to the advantage of a telephone company to furnish an amplified directory service when it is only paid for the use of its lines?" Probably several answers might be given to this. If figures could be obtained they would be likely to show that for every ten times a man looks up a name in the telephone book he substitutes one or two telephone messages for the letter he intended to send, the book thus tending to make him a more continuous user of the telephone lines. To the solicitor of contracts for telephone service who wants to show just what the telephone company is doing to make itself useful to the person he wishes to interest, the classified lists cannot fail to be helpful, and at all times the extra service may be considered a means of adding to the company's reputation for putting conveniences in the hands of its subscribers. This is always useful to the company when its affairs come up for general consideration by its patrons.

The principal objections raised against the classified directory relate to the questions of expense, and the possibility of the book becoming too cumbersome for convenience. Those in favor of the plan will point out that the insertion of proper advertising matter can undoubtedly be made to offset the additional cost, while if the classified lists eventually make the book too cumbersome for convenience, the subscribers will readily consent to their omission.

The plans worked out by Mr. Johnston, and described in this issue, offer some very interesting suggestions as to the actual methods to be pursued in making a good directory along these lines. Putting the rural lines under a printed notice which practically puts them in a separate business classification, in accordance with a general plan which was explained at considerable length in an article we published some time ago, seems to be a wholly new idea, and one worthy of considerable attention.

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Legal Snares Untangled

CONDUCTED BY A. H. McMILLAN.

TRIMMING TREES ALONG MARGIN OF HIGHWAYS.

In a recent issue of your valued paper, the writer noticed a decision through which the court held that trees located on curbstones, or on the edge of public roads, could be trimmed by telephone and telegraph companies to clear their wires, as they were public service corporations, and damages could not be recovered for such trimming.

Will you kindly advise through your paper what decision this was?

The writer would also like to know of any decision in Tennessee or Kentucky in reference to the right of telephone companies to trim trees on the streets or public highways in the State. Also what rights we have to trim trees on private property, projecting over the street or roads.—R. H. P.

THE decision above referred to is that of Hobbs vs. Long Distance Telephone and Telegraph Company, 4 S. 1003, in which it was held that the telephone company in Alabama might lawfully trim trees "along the margin of the public highway."

A Tennessee case upon the subject is Memphis Telephone Company vs. Hunt, 16 Lea, 456, 457 Am. Rep. 237. In that case suit was brought to recover damages from the telephone company for entering upon the premises of the plaintiff at 12 or 1 o'clock at night and cutting certain limbs of trees growing in her yard in the City of Memphis. She had refused to give the employees of the company permission to cut the limbs specified, so the act was done in this unusual manner. The company had been given authority by public officials to construct its line over the street and also to cut away limbs overhanging the streets and sidewalks that might interfere with the construction and operation of its line. The company was to pay any damage incurred, and the permission obtained from the public officials gave only the right of way on the street and not over private property. The court held that the company had no right to enter on the property to trim the trees, although the limbs of the trees projected over the sidewalk.

A RISK NOT ASSUMED BY EMPLOYEE.

THE crossing of wires outside of a building in which a man was working as engineer in charge of a machine, causing a powerful current of electricity to be diverted and brought into the building on wires not intended to carry such a current is not one of the ordinary and usual incidents connected with the engineer's employment, and is, therefore, not assumed by him. This was the ruling of the Illinois Court of Appeals in a case brought by the representatives of an engineer who was killed by the heavy current of electricity. Belvedere Gas & Electric Co. vs. Boyer, 122 Ill. App., 262.

TRIMMING TREES IN INDIANA.

Please let us know through "The Telephone in the Courts" what the law is in this State in regard to telephone companies trimming trees over which its wires pass. This is a special case. This company built a forty foot pole line along a street, going above all trees, and now one party's trees are just to our wires, we using two arms. He says that we can't cut his trees. The trees are on the curb line. This company is operating under a franchise. There is no alley to run our lead on. K. B. D.

IT is the law in Indiana that poles may be erected in the public streets for the purpose of operating a general telephone system without the consent of the adjacent property holders, and without making compensation to them. Magee vs. Overshirer, 150 Ind., 127; 49 N. E., 951. From this it follows that property owners cannot object to telephone companies trimming trees that stand in the highway, as we understand is the situation in the case above referred to.

DAMAGES TO WHICH ABUTTING OWNER IS ENTITLED.

ACTION was brought against the Bell Telephone Company of Philadelphia by the owner of abutting property to recover damages for interference with the light, air, access to and drainage of his property. The court held that where telephone poles and wires erected in streets under charter rights with municipal consent appreciably interfere with light, air, access and drainage, such interference is an additional burden to which the land of the abutting owner cannot be subjected without rendering to him just compensation. The pole to which the property owner particularly objected was a distributing pole six inches in diameter, and planted opposite an alley at a point between nine and ten feet distant from the house line. By reason of the pole, it was impossible for the owner to take long pieces of timber and lumber from the alley for the purpose of making repairs and alterations, and for this injury the owner was allowed damages. As to the specific amount of loss caused by injury to drainage there was held to be no evidence other than that the water backed into the plaintiff's cellar and the pole was erected within about eight inches of the drain, without anything to show the connection between the two conditions. The court held that the erection of the poles in the streets in conformity to municipal regulations was not in itself an additional burden upon the property. Shinzell vs. Bell Telephone Company of Philadelphia, 31 Pa. Super. Ct., 221.

A TRESSPASSER ON STREETS OF OWENSBORO, KY.

IN the case of the Kentucky and Indiana Telephone and Telegraph Company against the Rural Home Telephone Company, an amended answer was filed by the Rural Home Company in which it sets out that the Kentucky and Indiana company has never been granted any franchise by the city of Owensboro, Ky., and it is, therefore, alleged that "plaintiff did not have, at the time of the filing of its petition herein, and never has had any right, power or authority to do business as a telephone company in Owensboro, or own or operate a telephone plant or exchange in said city or to contract to furnish telephone connections or service to persons in Owensboro."

It is further stated that it had no power to enter into any contract with defendant company for telephone service between subscribers to the two systems of these companies.

It is claimed that ordinances purporting to give a franchise to the Owensboro Harrison Telephone Company, the assignor of the Kentucky and Indiana company, are void because violating that section of the constitution which provides that a city shall not be authorized to grant a telephone company any franchise for a longer term than twenty years and providing that all franchises must be sold by all cities, after due advertisement of the intended sale thereof, to the highest and best bidder.

VERBAL CONTRACT FOR TELEPHONE SERVICE WILL NOT BE SPECIFICALLY ENFORCED.

SPECIFIC enforcement of a contract is a remedy granted by courts of equity by which they make an order that a party to a contract must carry out its provisions under penalty of being considered in contempt of court. It will be seen that this is in many cases a much more comprehensive and satisfactory remedy than a mere suit for damages for the breach of a contract. It has recently been held that a verbal contract to furnish telephone service at a specified rate will not be specifically enforced notwithstanding the fact that, in consideration of such agreement, the plaintiff had rendered services and made a contribution in connection with the establishment of a telephone system.

The ground on which the above decision rests is that the contract is not within the Statute of Frauds, which is a law requiring every contract that, by its terms, is not to be performed within a year from the making of it, to be in writing. It was contended by the complainant that the rendering of services and making of a contribution constituted a part performance of the contract that rendered it unnecessary to have it in writing, but with this contention the court did not agree. Quinn vs. Stark County Telephone Co., 122 Ill., App., 133.

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The How and Why

LOCATING A CROSS WITH OHMMETER.—(868.)

We have an ohmmeter similar to the one described in the JOURNAL some time ago and would like very much to have you describe to us the method of locating the distance of a cross away from the exchange when no other wires than those crossed are available for testing. A. H. J., Missouri.

Providing that the cross is between wires that run parallel in the same direction from the exchange and are of the same size, all that is necessary to determine the distance of the cross from the exchange is to determine the resistance of the circuit formed by the line wires to the cross and back to the exchange. To do this you will attach your line wires to the binding posts A and B on your ohmmeter and test for the resistance. This is

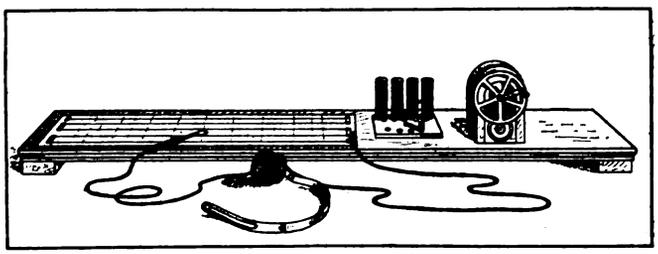

Fig. 868a.

accomplished by first placing the receiver to the ear, turn the crank of the generator, take the free terminal of the receiver which has the knife edged feeler, and pass it to and fro over the resistance wire until a point on the resistance wire is found at which the receiver becomes quiet and the throbbing of the generator cannot be heard. Having the ohmmeter scales as shown in Figure 868*b*, and as a concrete example assume that the switch lever is on the one hundred ohm coil, and that the receiver terminal stands at 300 upon the resistance scale, the total length of the scale is 500 divisions, the standard coil is 100 ohms. Then the resistance of the circuit formed by your two wires to the cross and back we will designate by X. Then the following equation holds true:

$$X = \frac{300}{200} \times 100 = 150 \text{ ohms}$$

In other words, divide the number on the scale opposite which the receiver contact stands, by the difference between this number and the full reading of the scale. Thus, the neutral point was 300, the whole length of the scale being 500, 500—300=200; then 300÷200=1½, which multiplied by the resistance of the standard coil, 100, gives as a result 150 ohms. This test gives you the resistance of the wires to and from the cross, which, divided by two, will give the resistance to the cross. Then knowing the resistance in ohms and the size of your wire the distance in feet may be readily ascertained by reference to the accompanying tables, which show the approximate resistance of iron and copper wires.

LIMIT FOR FREE SERVICE ON RURAL LINES.—(869.)

We have rural lines radiating from our central to a distance of 20 miles or more. Town business subscribers as well as rural subscribers have at present the free use of all our lines; others pay toll while using our rural lines.

We are about to still further extend our lines. Now, regarding distance, etc., a line has to be drawn somewhere as to what free service may properly be granted the different subscribers. We should like very much to hear from telephone men who have worked out of this difficulty in a satisfactory way. UNINITIATED, Canada.

This question of the limits for free service has probably received as much thought and discussion at meetings of telephone men as any problem confronting operators of rural lines. The Editor would like to see the men who have come to some conclusion which appears satisfactory to them send in their experiences for the benefit of the present inquirer and others.

APPROXIMATE RESISTANCE PER 1,000 FEET OF COPPER WIRE.

Size.	Ohms.	Size.	Ohms.	Size.	Ohms.
No. 0	.1	No. 10	1.	No. 20	10.
" 1	.125	" 11	1.25	" 21	12.5
" 2	.16	" 12	1.6	" 22	16.
" 3	.2	" 13	2.	" 23	20.
" 4	.25	" 14	2.5	" 24	25.
" 5	.32	" 15	3.2	" 25	32.
" 6	.4	" 16	4.	" 26	40.
" 7	.5	" 17	5.	" 27	50.
" 8	.63	" 18	6.3	" 28	63.
" 9	.8	" 19	8.	" 29	80.

Table 868c.

CAPACITY OF SWITCHBOARDS.—(870.)

We have been having an argument as to the size possible to construct common battery multiple switchboards and would very much appreciate having you inform us as to the largest possible board of this size. Also kindly explain what is meant by the term "divided multiple." F. F., Michigan.

By the use of the smallest jacks at present manufactured it is possible to construct an ordinary multiple switchboard of the common battery type which will be able to accommodate up to twenty thousand lines in extreme cases. A board of greater capacity than this would be very unwieldy, owing to the size and the distances the operators would have to reach in making connections. In exchanges where boards of a greater capacity than this are necessary, other arrangements are adopted. However, under the best of these arrangements, the chief of which are the divided multiple and transfer systems, the system suffers many disadvantages over the straight multiple.

AVERAGE WEIGHT AND RESISTANCE OF IRON WIRE.

Size.	Weight in lbs. per mile.	Average resistance in ohms per mile. E. B. B.	B. B.	Steel.
4	730	6.44	7.53	8.90
6	540	8.78	10.19	12.04
8	380	12.37	14.47	17.10
9	320	14.69	17.19	20.31
10	260	18.08	21.15	25.00
11	214	21.96	25.70	30.37
12	165	28.48	33.33	39.39
14	96	48.96	57.29	67.71

Table 868d.

The "divided multiple," or "divided board" system, as it is more often termed, is one in which each subscriber is provided with two or more distinct means of signaling the exchange.

At the exchange the lines are divided into a corresponding number of sets to form separate boards or sections—lines of numbers up to, say, 20,000 being allotted to an *A* division, those from 20,000 to 40,000 to a *B* division, etc., according to the number of divisions.

Each of these sections is provided with a calling signal and answering jack for every line in the exchange, but only those allotted to a division are multiplied on that division. Any subscriber can thus call on any one of the divisions of the board, but

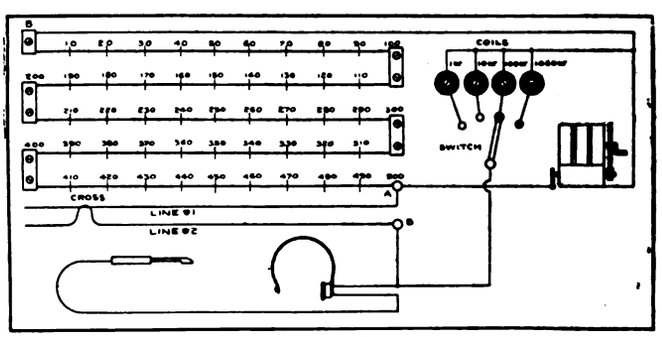

Fig. 868b.

is only called up on some one division depending upon his number. When he wishes to call a subscriber he looks up the number and then makes the proper adjustment of his instrument, so as to give the signal on the special section of the exchange to which the number he desires is allotted.

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Making a Telephone Directory for Business Men

The Story of a Directory Arranged to Make Its List of Names Emphasize the Time-Saving, Business-Aiding Value of the Telephone Service

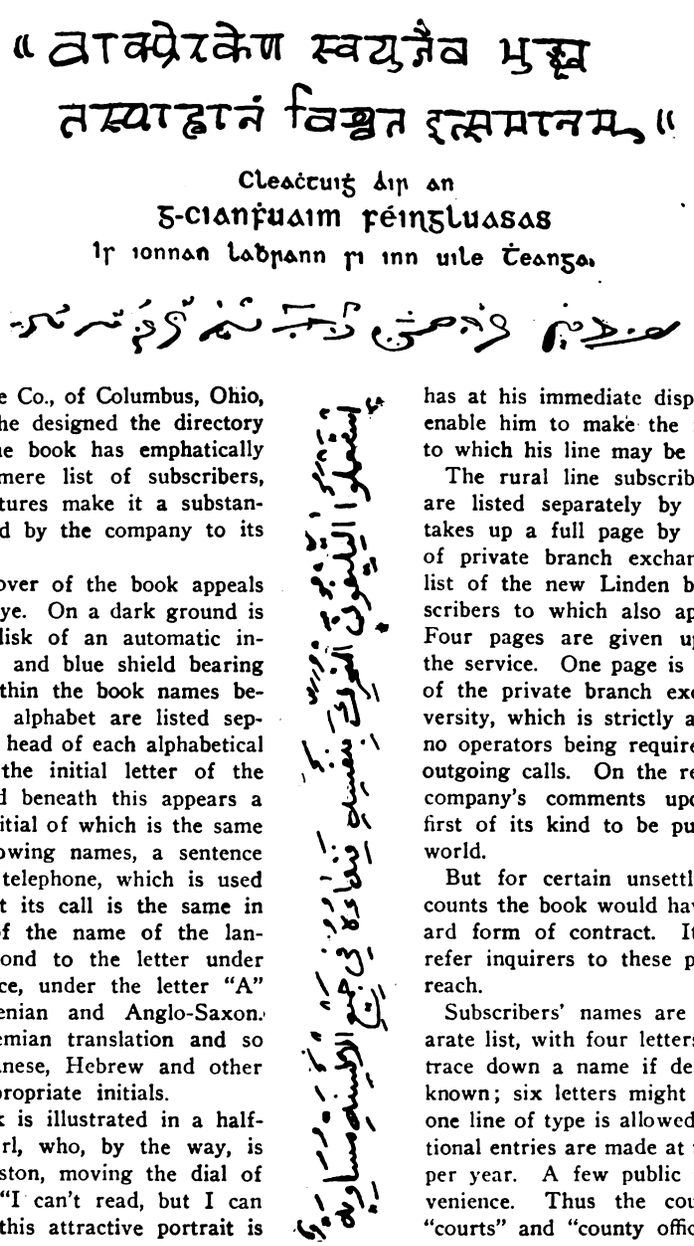
By L. A. Parrish.

SAVING time and effort to its patrons is the reason for a telephone company's existence. Its service is one which embodies in a pre-eminent degree the qualities of speed and convenience for the user. If the instruments and the central office are designed to cut down waste of effort by the patron to a minimum, why not go a step further and save his time when looking up a number in the directory? If he uses the telephone to get in touch with different people for transacting business speedily, why not let the directory, as well as the line, help him attain his object? Gansey R. Johnston, general manager of the Columbus Citizens' Telephone Co., of Columbus, Ohio, had these ideas in mind when he designed the directory used by his subscribers, and the book has emphatically "made good." More than a mere list of subscribers, its novel and useful special features make it a substantial part of the service rendered by the company to its patrons.

Striking in appearance, the cover of the book appeals forcefully yet pleasantly to the eye. On a dark ground is printed in bronze the calling disk of an automatic instrument, encircling a red, gray and blue shield bearing the name of the company. Within the book names beginning with each letter of the alphabet are listed separately, as is customary. At the head of each alphabetical division appears in bold type the initial letter of the names in the following list, and beneath this appears a sentence in some language the initial of which is the same as the initial letter of the following names, a sentence that recommends the automatic telephone, which is used by the company, and states that its call is the same in every language. The initials of the name of the languages in other words correspond to the letter under which they appear. For instance, under the letter "A" appears the sentence in Armenian and Anglo-Saxon. Under the letter "B" the Bohemian translation and so on. Sentences in Chinese, Japanese, Hebrew and other languages appear under the appropriate initials.

A related feature of the work is illustrated in a half-tone print of a five-year-old girl, who, by the way, is the little daughter of Mr. Johnston, moving the dial of a desk set which is labeled, "I can't read, but I can count." As a decorative piece this attractive portrait is balanced by a view of a smaller child holding a receiver and saying, "I can't count, but I can talk."

In the opening and closing pages of the book the company has taken unusual pains to explain and comment upon its service, giving a page to instructions relating to the automatic telephone, one to general rules and courtesies, one to the information bureau and the trouble department, one regarding the directory and its methods of compilation, with suggestions as to its use; pages relating to the United States Telephone Company's long distance service and to the county service which is handled through the long distance department. In the Franklin county department the business telephones and the toll stations on the fourteen county exchanges are given, but not the farmer lines and residence telephones. With this is a conventionalized map of the county toll lines. Under this plan each subscriber has at his immediate disposal all information required to enable him to make the fullest use of the entire system to which his line may be connected.



Sentences in Vedic, Gaelic, Persian, Arabic, Esperanto, Turkish and Bohemian Appearing Beneath Alphabetical Index Letters in the Directory.

The rural line subscribers on the Columbus exchange are listed separately by lines and the pay station list takes up a full page by itself. There is a separate list of private branch exchange subscribers and a separate list of the new Linden branch exchange, names of subscribers to which also appear in the body of the book. Four pages are given up to pictures and remarks on the service. One page is required to show the telephones of the private branch exchange of the Ohio State University, which is strictly automatic in its entire operation, no operators being required either for its incoming or its outgoing calls. On the reverse side of this page are the company's comments upon this service, which is the first of its kind to be put in operation anywhere in the world.

But for certain unsettled questions in rates and discounts the book would have had a rate sheet and a standard form of contract. It is frequently advantageous to refer inquirers to these pages, which are always in easy reach.

Subscribers' names are numerically arranged in a separate list, with four letters of the name given sufficient to trace down a name if desired, when only the number is known; six letters might be better. In the classified list one line of type is allowed each business main line. Additional entries are made at the extra name service rate of $6 per year. A few public places are listed twice for convenience. Thus the county courts are classed under "courts" and "county offices." Churches, charitable institutions and lodges are given business classification, but pay only residence rates, and ministers' residences are classified. Physicians' residences are also classified when they have both business and residence telephones.

The classified list is as concise as possible, with two columns to

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the page. Practically all addresses are omitted, but those subscribers having two or more trunk lines are offered the benefit of a distinction between their different numbers, as by different addresses, or by "office" or "factory" and the like. The cost of including the classified list is comparatively low, and is largely paid by the extra name service charges it influences.

After the private branch exchange names in the classified list appears the designation "P. B. Ex." To indicate more than one line in the rotary group, in which the switch on a single call automatically selects the first trunk not busy, the lowest number is followed by a "+" sign, as 8144+, for the subscriber who is connected to the lines 8144-45-46-47. In the alphabetical list a single one line entry is allowed for each main line telephone; nothing for extension telephones. The type is set solid across the page. The only specially distinguishing type used except for the fire and police calls and information and trouble numbers, is reserved for the private branch exchanges, which are given a heading in capitals and as a rule have their stations listed. With 55 such exchanges scattered through its pages there is almost an even chance of finding one at any opening of the book. Interior or intercommunicating sets are not dignified as private branch exchanges.

In this book for the first time is introduced an "extra number" service. This consists of inserting "Office No. —" on the same line with the residence listing, or vice versa, at $3 per year.

One of the Illustrations of a Youthful Telephone User.

The paper in the book is of first quality 60-pound litho-super; the type and the press work are of the best. The telephone numbers are in extra legible heavy faced type. The preceding directory was so expensive that it became necessary to reduce the cost either by the use of cheaper press work and poorer paper, or the omission of one or more of the special lists, or the introduction of advertisements.

While there is some sentiment against advertisements in a telephone directory, it was reasoned that the public would pre-

3008 Public Library and Reading Room, Grant Ave., head of State
9142 Sewage Purification Works, Frank Road and Jackson Pike
5156 Sinking Fund Trustees, City Hall
11292 Street Cleaning Department, 176 W. Long St
3671 Water Purification and Sewage Disposal, Chapel and Pearl Sts

LONG DISTANCE SERVICE

Columbus has the largest toll board in the independent telephone field. Franklin County business alone employs seven operators; other long-distance business forty operators. Nearly eighty thousand messages a month are now handled from, to and through Columbus, or almost double the number possible to handle with the old equipment. More than two hundred and fifty thousand telephones are reached in Ohio alone. To Franklin County points radiate twenty-four toll lines with twenty four additional branches. A network of independent lines covers Ohio almost as thoroughly. One movement of the automatic dial puts a signal before a long-distance operator.

Company's Advertisement of Long Distance Service at Foot of Directory Page.

fer a first quality book with advertisements to a second quality book without advertisements. The advertisements have been confined to the lower quarter of the right hand pages, nothing appearing as top, bottom or margin lines. No heavy faced type is permitted in the body of the book to give one subscriber

Rural Lines

Most of the persons named in this list are farmers, and most of these farmers have produce to sell to dealers or consumers in Columbus—potatoes, apples, berries, poultry, eggs, butter, hay, grain, live stock, and so on. Many of them also have stands in Columbus markets. Many buy and sell horses and take them for pasture. Altogether they serve the residents of Columbus in more ways than we can here enumerate. At this time the telephone company has no list of those prepared to fill telephone orders, but there seems to be no reason why trade may not be greatly facilitated between producers and consumers of farm produce in Franklin County by the more frequent use of the telephone.

NOTE.—The heavy number (as 99103) refers to the automatic call, and the smaller figures the number of rings on the line.

99103 SOUTH HIGH STREET LINE.
1 Reeb, Louis
2 Reeb, Edward
3 Vick, J. E.
4 Shoaf, George W.
5
6

99104 PETZINGER ROAD LINE.
1 Petzinger, Adam

Head of Section Devoted to Rural Line Service.

a more important appearance than another, except as noted for private branch exchanges.

Thirteen thousand directories were printed in the edition now

2978 Beall Co. (The), Dry Goods, 155 N. High St.
4243 Beall, E. E., Residence, 106 Lexington Ave.

WANT ADS BY TELEPHONE

Telephoned Advertisements for classified columns will be accepted by the newspapers from subscribers for Citizens Telephones, whose names and numbers may be verified by the Telephone Company.

Columbus Citizen.....8206+P. B. Ex.
Columbus Evening Dispatch 8144+P. B. Ex.
Columbus Press Post.....2430
Ohio State Journal.....2348
Obio Sun.....8396+P. B. Ex.

19

One of the Novel Advertisements Which Helps Build Up the Service.

being distributed. Each quarter page of advertisement was charged at $12.50. When the company's officers were planning the issue numerous directory and other canvassers tried to control it. They made all sorts of offers for the privilege of

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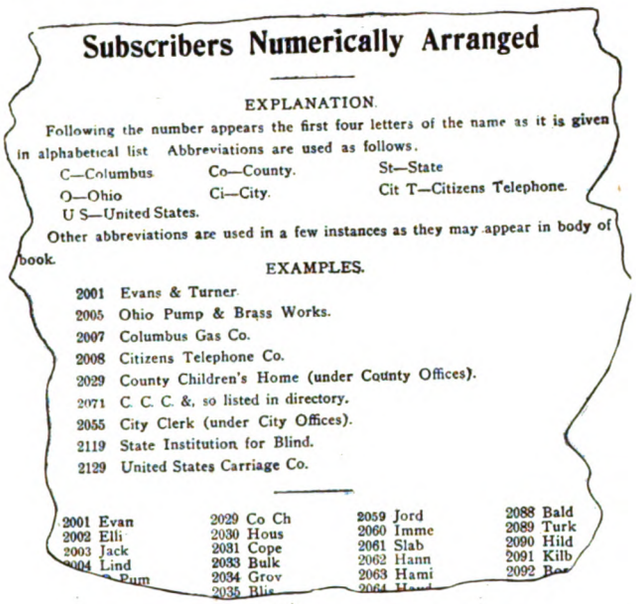
publishing it. Some offered to print and publish it without expense to the company; others offered to take it on commission, while a few even offered a bonus. The officers did not wish to have subscribers persistently solicited for advertising matter and accordingly one of the company's employes simply presented the opportunity to take the space if desired. No objection was raised to the insertion of Bell telephone numbers in advertisements. Advertisements were accepted only from subscribers for business telephones. Under this plan only about 75 advertisers were found for this first edition to fill the 150 spaces reserved for advertising, care being taken to eliminate all objectionable matter. To fill the remaining space some advertisers were given as a premium two spaces for the price of one and with that several advertisements of the Columbus Citizens' Telephone Company itself were inserted. There is



Subscribers Numerically Arranged

EXPLANATION.

Following the number appears the first four letters of the name as it is given in alphabetical list. Abbreviations are used as follows.

C—Columbus Co—County. St—State
O—Ohio Ci—City. Cit T—Citizens Telephone.
U S—United States.

Other abbreviations are used in a few instances as they may appear in body of book.

EXAMPLES.

2001 Evans & Turner.
2005 Ohio Pump & Brass Works.
2007 Columbus Gas Co.
2008 Citizens Telephone Co.
2029 County Children's Home (under County Offices).
2071 C. C. C. &, so listed in directory.
2055 City Clerk (under City Offices).
2119 State Institution for Blind.
2129 United States Carriage Co.

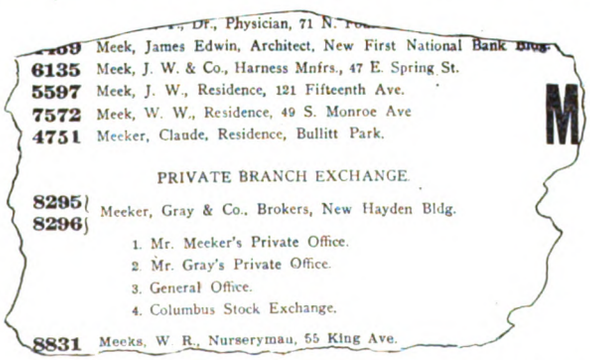
2001 Evan	2029 Co Ch	2059 Jord	2088 Bald
2002 Elli	2030 Hous	2060 Imme	2089 Turk
2003 Jack	2031 Cope	2061 Slab	2090 Hild
2004 Lind	2033 Bulk	2062 Hann	2091 Kilb
Pum	2034 Grov	2063 Hami	2092 Bo
	2035 Blis	2064 Hand	

Part of First Page of Numerically Classified List.

little doubt that in the next issue more advertisements than can be used will be offered.

The present issue contains nearly 9,000 names and has 356 pages. The delivery was made by the American District Telegraph Company. Public places, pay stations, etc., are furnished a removable cloth binder for their copies. No effort has yet been made to exploit advertising on this cover, as is done in Chicago. Among the notices in the book are readers stating that named newspapers will receive want ads. by telephone and named theatres will accept telephone orders for tickets and reserve seats by telephone.

The telegraph companies use the directory as a sort of en-



..., Dr., Physician, 71 N. Fo...
...69 Meek, James Edwin, Architect, New First National Bank Bldg.
6135 Meek, J. W. & Co., Harness Mnfrs., 47 E. Spring St.
5597 Meek, J. W., Residence, 121 Fifteenth Ave.
7572 Meek, W. W., Residence, 49 S. Monroe Ave
4751 Meeker, Claude, Residence, Bullitt Park.

M

PRIVATE BRANCH EXCHANGE.

8295 } Meeker, Gray & Co., Brokers, New Hayden Bldg.
8296 }

1. Mr. Meeker's Private Office.
2. Mr. Gray's Private Office.
3. General Office.
4. Columbus Stock Exchange.

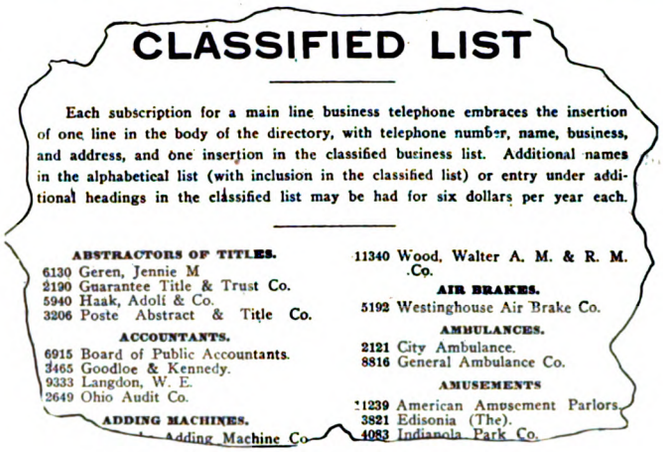
8831 Meeks, W. R., Nurserymau, 55 King Ave.

Sample of Regular Business, Residence and Branch Exchange Listing.

larged credit list and are almost perfectly safe in so doing. Without some such guide these offices are always fluctuating between too broad and too restricted credit in dealing with the many persons unknown to them who are constantly receiving messages.

To assist in counteracting a real objection to letting directories get into use beyond the company's recall, thus bringing about occasional complaints, or loss of business, those sent out of town bear a slip reading:

"A telephone directory never contains the names of all persons



CLASSIFIED LIST

Each subscription for a main line business telephone embraces the insertion of one line in the body of the directory, with telephone number, name, business, and address, and one insertion in the classified business list. Additional names in the alphabetical list (with inclusion in the classified list) or entry under additional headings in the classified list may be had for six dollars per year each.

ABSTRACTORS OF TITLES.
6130 Geren, Jennie M
2190 Guarantee Title & Trust Co.
5940 Haak, Adolf & Co.
3206 Poste Abstract & Title Co.

ACCOUNTANTS.
6915 Board of Public Accountants.
3465 Goodloe & Kennedy.
9333 Langdon, W. E.
2649 Ohio Audit Co.

ADDING MACHINES.
... Adding Machine Co.
11340 Wood, Walter A. M. & R. M. Co.

AIR BRAKES.
5192 Westinghouse Air Brake Co.

AMBULANCES.
2121 City Ambulance.
8816 General Ambulance Co.

AMUSEMENTS
1239 American Amusement Parlors.
3821 Edisonia (The).
4083 Indianola Park Co.

Section of Classified List of Business Subscribers.

that can be reached. Particularly on long distance calls, don't refrain from trying because the person or business you seek is not listed when you look. Ask, and in asking give all the information you can—name, business, street location and all."

Companion Illustration—Calling a Number.

Except as they are given in courtesy, it is the practice to sell the directories at cost to county exchange subscribers and to non-subscribers generally. The Columbus company will be pleased to exchange directories with other telephone companies of corresponding size.

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The manager's office has a file of all the essential parts of other directories, retaining the pages which have striking ideas or new forms for future study and reference. The advertisements and covers are also filed.

The present directory is regarded as a model book by all telephone men to whom it has been referred, and is an extremely valuable ready reference directory to the business men of Columbus.

Flat Rates vs. Measured Service*

ABSTRACT FROM THE REPORT OF THE SPECIAL COMMITTEE OF TELEPHONE EXPERTS APPOINTED BY THE CITY COUNCIL OF CHICAGO.

WE think the Chicago Telephone Company has involved itself in considerable unnecessary expense by apparently encouraging subscribers to make calls upon operators for various items of information. The record of a count made in November, 1906, shows that more than 42,000 requests for the "time of day" were made of the operators on that day. The expense of this service would go far toward keeping the subscribers who asked the time of day supplied with clocks; and various other much repeated enquiries apparently aggregate an equal expense.

In further illustration of the relation of the number of calls made per telephone by different users, we have had some additional charts made from the data which we have gathered together.

Chart No. 7 shows the number of flat rate lines and the number of measured rate lines in the Chicago exchange district. The flat rate lines include what are known as commutation trunk lines, namely, lines from private branch exchanges which are used for outgoing messages only; and the measured rate lines do not include the ten-party lines, which we have put upon a separate chart (No. 10). It will be observed that the number of measured rate lines is rapidly increasing compared with the number of flat rate lines.

Chart No. 8 shows the total number of calls per day originating from the flat rate telephones and from the measured rate telephones connected with the lines illustrated in chart No. 7.

Chart No. 9 shows the average numbers of daily calls per line and per telephone on the flat rate lines and on the measured rate lines which are illustrated in chart No. 7; and this chart indicates the large difference which exists between the two kinds of service now current in Chicago in respect to the number of calls per line or per telephone per day. The average number of calls per line on the flat rate lines is steadily increasing, thus increasing the annual expense to the telephone company per line, though the price charged to the flat rate subscribers remains independent of the use of the telephones. The numbers of calls per line and per telephone on the measured rate lines show different characteristics. The number of calls per telephone per day is steadily decreasing toward an apparent minimum limit of approximately six calls per telephone per day, thus decreasing the cost to the telephone company and making it possible to make marked reductions in the average price per telephone.

Chart No. 10 shows the number of ten-party telephones, the

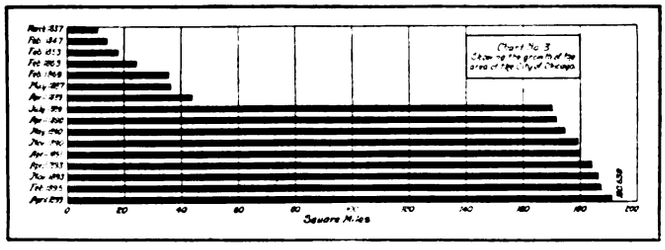

Chart No. 3.

total number of calls per day originating from these ten-party telephones, and the average number of calls made daily per telephone. This shows that in this service the number of calls made daily per telephone is remarkably low, and the price of this service may properly be made correspondingly low.

There is another feature which relates to the question of relative use by flat rate and measured rate users of telephones. It is impracticable to connect all telephone subscribers in a great exchange system, such as is found in Chicago, with a

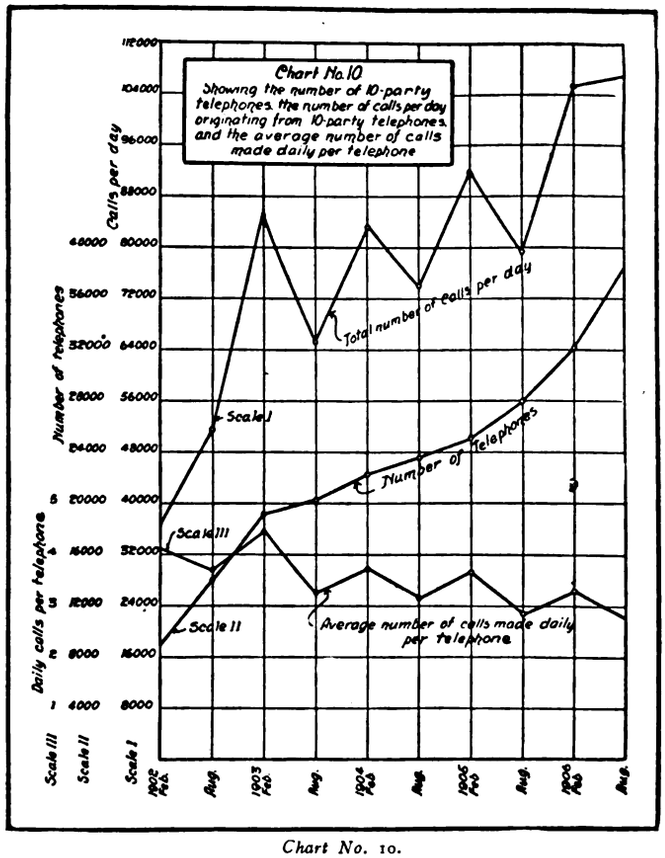

Chart No. 10.

single office, and it becomes necessary to arrange means for transferring calls made by lines in one office to the called-for subscribers' lines in other offices. This is ordinarily denominated "trunking" the calls between the offices, and it involves a double expense for operators, since one operator is required to receive the call of the subscriber at the originating office and another operator is required to complete the connection to the called subscriber's line in the second office. As the system increases in number of telephones, the proportion of "trunked" calls is likely to increase. We have illustrated this in connection with our Chart No. 15, which shows the way in which the "trunked" calls, marked "B calls" on the chart, increase as the service extends. This chart No. 15 shows the daily number of "B calls" according to the "peg counts" of February and August for a number of years back, and it will be observed that the number of "B calls" consistently increased during this period. This chart also shows the number of measured rate calls originating from subscribers' lines and the number of flat rate calls originating from subscribers' lines, and it will be observed that the number of flat rate calls has increased year by year at a rate approximately equal to the increase of calls from measured lines, although our chart No. 7 shows that the number of flat rate lines has not been increasing as rapidly as the measured rate lines. Chart No. 15 also shows that the rate at which "B calls" or "trunked" calls increase corresponds more nearly to the rate at which the flat rate calls increase in number than to the rate at which the measured rate calls increase.

*Continued from the issues of May 11 and 18, in which a number of charts referred to for the second time in this issue will be found.

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THE DEADLY PARALLEL

AUTOMATICS VS. LEVERS

With GRAY PAY STATIONS you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

GRAY TEL. PAY STATION CO.

HARTFORD, CONN.

OUR '07 CATALOGUE SENT ON REQUEST

FOR SALE

For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

SECOND HAND switchboards for sale—2 100 capacity Chicago Telephone Supply Co.; 1 200 capacity and 1 100 capacity Western Telephone Construction; 1 100 capacity Swedish-American; 2 50 capacity and 2 100 capacity Eureka; 1 100 capacity Standard; 3 100 capacity Keystone; 3 200 capacity and 1 100 capacity North. Address Victor Telephone Works, 6583 State St., Chicago, Ill. 817

FOR SALE—A country telephone system in Eastern Vermont, consisting of about 45 miles of circuits and 80 subscribers connected. Over $800 worth of new goods on hand for enlargement and improvement. Address Box 846, care AMERICAN TELELPHONE JOURNAL, 100 William St., New York. 846

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WANTED—Position with telephone company on construction or instrument work. Five years' experience, best of references. Address Box 836, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 836

WANTED—Back numbers of AMERICAN TELEPHONE JOURNAL for January, February and March, 1907. Address, stating lowest price, Box 840, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 840

WANTED---Continued

POSITION WANTED—A first class man wants to make change. Would like position as Manager or Wire Chief. Twelve years' experience. A-1 reference. Address, Box 825, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 825

WANTED.—Position as Manager, Supt. or Common Battery Installer by married man 29 years of age, 8 years' telephone experience with Bell Company, 5 years in common battery and 3 in local battery. Have position at present as traveling electrician with Bell Co. 4 years as Manager. Address Box 844, care AMERICAN TELEPHONE JOURNAL, 100 William St., N. Y. City. 844

TRAVELING MAN wanted, familiar with telephone material and electrical supplies; to cover the Middle Atlantic States on a line of specialties selling to Telephone Exchanges and Supply Houses. State age, experience and salary willing to commence with. A good position and future for a live man. Address Box 845, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 845

WANTED—Position as manager or superintendent of telephone exchange. Central energy or magneto. Can furnish best reference as to ability, habits, etc. Address Box 841, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 841

WANTED—Salesman for telephone instruments and supplies for New York State, Pennsylvania or the Middle West. An exceptional opportunity for the right man. Address Box 843, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York City. 843

BIJUR

BATTERIES

ought to be selected for

TELEPHONE SYSTEMS

Signal Systems, Fire Alarms and similar installations—depending upon a reliable source of current because they don't buckle, blister or sulphate.

General Storage Battery Co., General Offices: 42 Broadway, N. Y. Works: Boonton, N. J.

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The indications that are afforded by chart No. 15 are likewise afforded by the series of load curves which we have given. We have plotted the load curves for the "peg count" taken on August 3, 1906, in all the telephone exchange offices of the city, giving separate curves representing the measured rate calls, the flat rate calls, and the incoming trunked or "B calls" for each exchange. We have also given a line showing the sum of

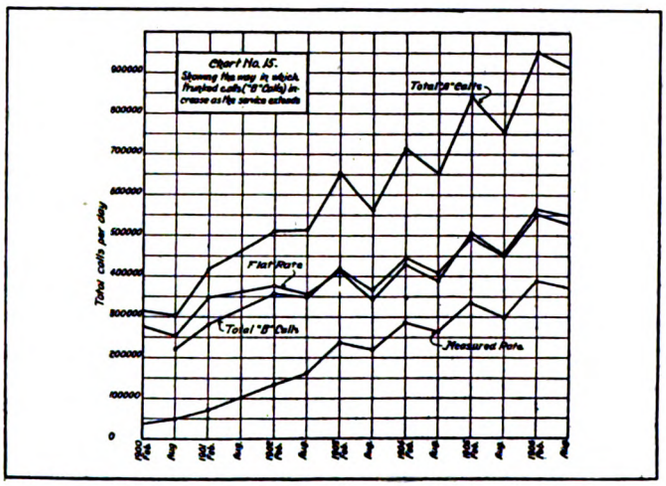


Chart No. 15.

the measured rate and flat rate calls for each exchange on that day. The Chicago Telephone Company makes a "peg count," as heretofore indicated, once a month, and we have given the load curves for the "peg count" for one month, taken at random.

Load curve No. 9 gives the sum of the calls obtained from the several exchange offices in the Chicago exchange district. The curves are shown as the total number of calls originating on all the subscribers' lines (marked "A" calls) on August 3, 1906, during each hour of the day, the total number of measured rate calls during each hour of the day, the total number of flat rate calls during each hour of the day, and the total number of "trunked" or "B" calls coming in to all of the exchange offices during each hour of the day. A point on each of these curves indicates the number of calls of the particular class during the corresponding hour of the day. The indication of "B" calls on the load curves for the several separate exchange offices does not afford any means of telling from what sort of a line the original calls emanated, because records of the trunked calls are only made at the receiving office, while the sending office (where the "B" call is not recorded) is the only one which could determine from what sort of a line a trunked call emanates. But the total load curve makes it possible to compare the total trunked calls with the total flat rate and the total message rate calls, and it will be observed that the number of trunked calls corresponds closely to the number of flat rate calls. This is probably an indication that the greater proportion of the trunked calls come from the flat rate lines, and that these lines are consequently causing more than a proportional share of the double expense of the trunked calls.

In passing, we will call attention to the complexity of the service indicated by these load curves. It will be noticed that the load curve for Harrison exchange, which is in the business portion of the city, and is typical of the load curves at Main, Central and Harrison exchanges, shows extended peaks of traffic; that is, it shows a very large number of calls at a particular hour, about 11 o'clock in the morning, and that business falls off rapidly on either side of the peak. There is another peak in the afternoon in each of these exchanges. In some exchanges there comes a relatively high peak between seven and nine o'clock in the evening, apparently due to the demands of social intercourse between the families of subscribers.

These great variations in the hourly use of the telephone increase in a marked degree the cost per message for operating, because the telephone company must always have sufficient operators on hand to meet the requirements of the hour, and must have a sufficiently large switchboard to enable it to handle all the calls which arrive at the busiest hour. Even with the best arranged schedule for the operators' work, it is impracticable to arrange for operators to be on hand for only one or two hours in the morning and one or two hours in the afternoon, but the operators must be put at work for a considerable number of hours at a time, so that the irregularities of the load curves which run up into high peaks increase the cost of operating on account of increasing the average number of operators that must be kept on duty in proportion to the total number of calls per day, and also increase the cost for interest and maintenance on account of the extra switchboard positions required to enable these extra operators to perform their work.

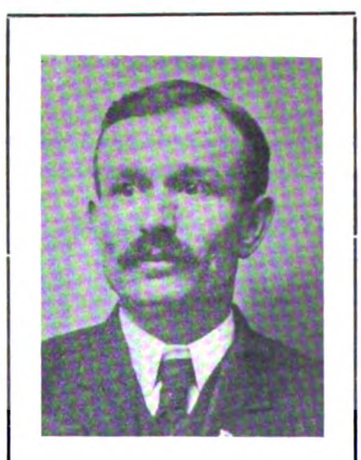
A scrutiny of the load curves of the various exchange offices and especially of the business offices, indicates that the greatest proportion of the peak of the load in each exchange office comes from the flat rate users, and that the measured rate curve is more uniform over the period of the day. This absence of peak makes it possible to perform the telephone service more economically, and the present measured rate users are therefore less expensive users to whom to supply service. A measure of the expense of the operating is to some degree indicated by the ratio of the maximum number of calls in the busy hour to the total number of calls per day in the exchange. This ratio is larger for the flat rate calls than for the measured rate calls in the Chicago exchange district. As shown by the twelve "peg counts" for 1906, the average ratio for the total number of originating calls is .1072, the ratio for the flat rate calls is .1185, and the ratio for all measured rate calls, including ten-party lines, is .0991, which indicates that the cost of operating for the measured rate calls is less than the cost of operating for the flat rate calls. Other peg counts show similar results.

Service inspection tests from the New York city exchanges, which are operated almost entirely on the measured service basis, show that the proportion of unavailing calls there is only about one-sixth of the total calls, and that the proportion of calls receiving busy reports is one-twelfth of the total calls. A comparison of peg counts for these two exchange systems indicates that the expense for traffic employes per station is lower in New York than in Chicago, and we conclude that this difference must be due to the measured rate method of charging.

(To be concluded.)

THE VIRGINIA CONVENTION.

COMPANIES from all over the State of Virginia were represented at the recent convention of the Virginia Independent Telephone Association, held at Norfolk, on May 21. Matters of general interest to operating men were taken up, and much benefit was derived from their discussion in detail. Papers were read by a number of prominent members dealing with the question of rates, franchises and various other matters of general or special interest at this time.



B. L. Fisher, Re-elected Secretary and Treasurer.

The matter of developing the long distance business of the State, and arranging for the putting up of toll circuits to connect the exchanges of the different companies, with lines built according to the best modern standards, was given lengthy consideration. A committee appointed by the president will take this matter up in detail, and work out plans for the building of such lines as will best meet the needs of the several operators. A report of this committee will be presented at the second meeting, which is to be held in Norfolk within the next few months.

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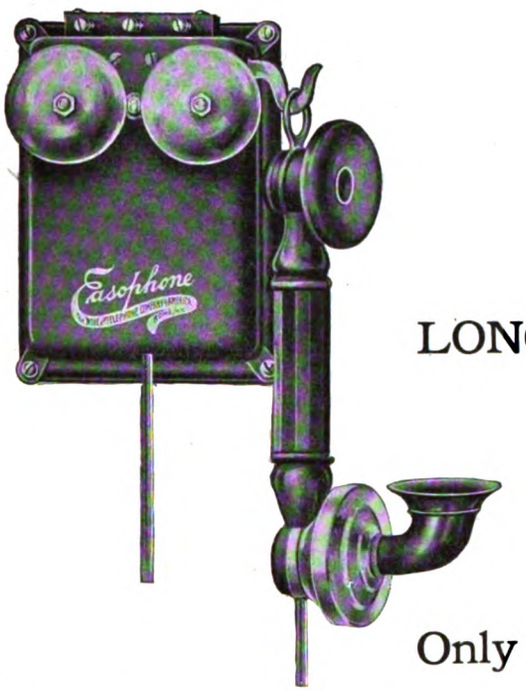

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The Wire and Telephone Company of America
Rome, N.Y.

LONG DISTANCE HAND TELEPHONE

Lowest Maintenance Cost

SOLID METAL FRAME ENCLOSED IN VULCANIZED HARD RUBBER

Only Nine Exposed Parts

No Exposed Connections

Practically Indestructible

LET US SEND SAMPLE EQUIPMENT

Visit Our Exhibit, International Telephone Convention, Auditorium Hotel, Chicago, June 4-5-6, Room No. 647.

THE DRIVE & TWIST ANCHOR

For GUYING POLES

Patented Aug. 28, 1906

For Sale by all Jobbers of Electrical Supplies
and
By all Manufacturers of Telephone Equipment

MANUFACTURED ONLY BY
THE
Vote-Berger Company
La Crosse, Wisconsin

Write for Bulletin No. 59

NET PRICE LIST OF THE D. & T. ANCHOR, DRIVE AND TWIST

Trade No.	Span of Blades	Width of Blades	Length of Shaft	Diameter of Shaft	Diameter of Pin	Price per Anchor
1	8 inch	2½ inch	5 feet	⅝ inch	5-16 inch	$0.75
2	8 inch	2½ inch	5 feet	⅝ inch	5-16 inch	1.25
2 Special	11 inch	2½ inch	5 feet	⅞ inch	5-16 inch	1.35
3	12 inch	3½ inch	6 feet	⅞ inch	½ inch	1.50
4	12 inch	3½ inch	6 feet	⅞ inch	½ inch	2.25

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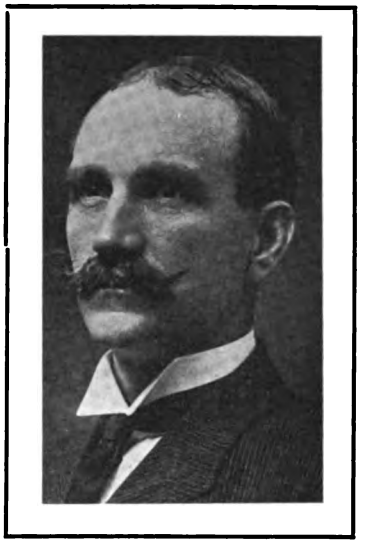
One of the minor matters discussed related to the stationery to be used by members. It was decided that in connection with the use of the shield on letterheads and envelopes, it should also be stated that the companies which belong to the Association should print a line stating that they are members. After the presentation of papers, and a discussion of the various business matters mentioned, the Association proceeded to the election of officers, and those who have served during the past year were chosen without exception to carry on their duties through new terms. The officers of the Association are: President, Albert Parlett, Bristol; first vice-president, F. F. Marbury, Alexandria; second vice-president, W. N. McAnge, Suffolk; secretary and treasurer, B. L. Fisher, Rocky Mount; executive committee, C. Fred Bonney, Norfolk; Geo. B. Keezel, Keezeltown; Albert Parlett, Bristol; W. N. McAnge, Suffolk; F. W. Davie, Lawrenceville. Mr. W. N. McAnge was appointed delegate, and F. W. Davie, of Lawrenceville, alternate, to the convention at Chicago.



W. N. McAnge, 2d Vice-President, Who Took a Leading Part in Toll Line Discussion.

Members from various parts of the State reported very satisfactory conditions of growth and development, and a number of telephone men who have not heretofore co-operated officially with the Association were elected to membership.

CONVENTION OF MICHIGAN INDEPENDENT TELEPHONE MANAGERS' ASSOCIATION.

ON May 8-9 the second semi-annual convention of the Independent Telephone Managers' Association of Michigan, in Owosso, was attended by one hundred and three ladies and gentlemen from operating departments of telephone companies in various parts of the State.

The following program was carried out as outlined, with the exception of the paper, "Through Business," by Mr. B. L. Carson, of Bay City, who was unable to be present.

Address of welcome, Hon. D. H. Lamb, Mayor of Owosso; opening address, Mr. F. V. Newman, President of the Association.

THE OPERATING ROOM.

"The Chief Operator," Miss Margaret Heney, chief operator, Owosso; Discipline and deportment of operators, Miss Fannie Hiddie, chief operator, Grand Rapids; Information department, Miss Amelia Kowlski, chief operator, Ann Arbor; the merit system with operators, Mr. C. E. Smith, manager, Cadillac; Service reports, Mr. H. W. Sexton, wire chief, Owosso.

EVENING SESSION.

Dinner at hall for delegates and invited guests; dinner followed by social hour; address, Hon. S. E. Parkill, Owosso; Mr. Charles E. Tarte, Toastmaster.

SECOND DAY—TOLL WORK.

Through business, Mr. B. L. Carson, manager, Bay City; General handling of toll business, Miss Inez E. Close, manager, Pontiac; Following up unfinished toll tickets, Mrs. Florence R. Gould, chief operator, Battle Creek; Co-operation between toll operators, Miss Jessie D. Presley, manager, Belding; Information on toll tickets, Mr. Geo. F. Stratemeyer, traffic manager, Grand Rapids.

All of the papers were good and provoked very profitable discussion. The paper on "The Chief Operator" by Miss Heney, the one on the "General Handling of Toll Business" by Miss Close, and "Co-operation Between Toll Operators" by Miss Presley, were accredited special attention as possessing exceptional merit. All present expressed themselves as not only having a very delightful but very profitable two days.

Quite unusual at a convention of this character, the entire delegation sat down to a fine banquet prepared by the ladies of the city, under the management of Secretary H. T. Clough, in the dining-room adjacent to the Foresters' Hall, where the convention was held.

Invitations to hold the next meeting, which will probably be sometime in December, were received from Detroit, Battle Creek, Muskegon, Grand Rapids and one or two other places.

A HOME-MADE LINE LIGHTNING ARRESTER.

By R. B. Fegan.

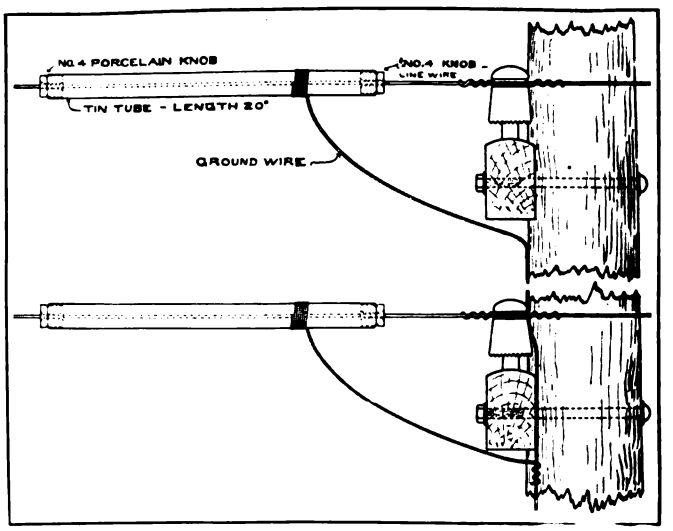
ON long rural telephone lines, where the best protecting devices are not employed in the exchange, the item of repairs in the course of a year occasioned by lightning entering the exchange and burning out the switchboard drops is one that is very likely to cause the manager some little concern. Not only does the lightning cause trouble in this manner, but often a much greater loss of time and material results from a stroke which enters a subscriber's station, or follows a pole from the line wire to the ground, perhaps shattering the pole.

A large portion of this danger may, in the writer's opinion, be obviated by the use of a cheap, yet efficient, line lightning arrester, arranged as shown in the diagram. It is simple in construction, easily applied and can be made by any village tinsmith. All the material necessary is a tin tube twenty inches in length, two No. 4 porcelain knobs and a ground wire.

The tube should be fastened in the same manner as a stove pipe and just large enough to admit the porcelain knobs. Insert a knob in each end of the tube and with a pair of pliers or a hammer gently force the tin down into the grooves of the knobs at each end. This will secure the knobs in position.

The completed arrester is then placed on the line wire, one section from the head, by slipping the line wire through the screw holes of the porcelain knobs, in the manner shown. The ground wire should be wrapped around the tube tightly for about six times and soldered. It is then run down the pole to a well made ground. A number twelve galvanized iron wire serves this purpose the best. All of the arresters on the pole may be connected to the one ground wire.

This comparatively crude arrester, while not making an extraordinarily handsome appearance, serves the purpose of



Lightning Arresters, Each Made of Porcelain Knobs and a Tin Tube, Set Up on Rural Telephone Line.

keeping the line discharge below the striking point and of diverting the major portion of any such discharges away from the exchange arresters and the arresters on the telephones.

The writer has personally used arresters made in the above described manner for the past year and has found them very satisfactory. There is every reason to believe that they have saved their cost, which is about twenty cents a pair, many times over in that time. One particularly commendable feature about them is that they require no renewing or new fuses at any time.

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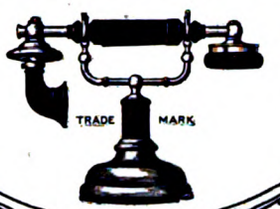
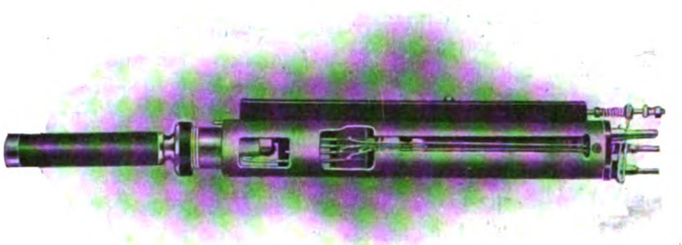
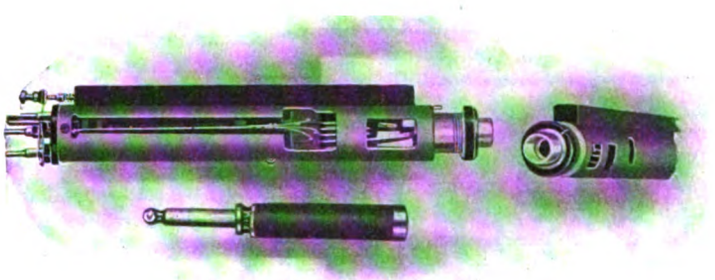


ERICSSON AUTOMATIC DROP FOR MAGNETO SWITCHBOARD





The easier you make it for your operator to handle calls the more efficient your service will be.

The smaller the automatic drop is the smaller the board.

The smaller the range of reach for connections the more subscribers one operator can handle.

Two hundred indicator jacks, as shown by cuts, can comfortably be fitted in a panel measuring 11¼" x 21⅝" and easily handled from one position.

Incased in a soft iron shell, making it practically indestructible, the indicator jack embodies drop, jack and night contact.

It is self-contained and fastens in the panel from the front by a single nut.

The number of drops may be increased one at a time.

The operator cannot replace the signal without inserting the plug fully.

It is patented in all telephone using countries.

The Ericsson workmanship accounts for the successful operation of over 50,000 of these indicator jacks.

Investigate this before you place orders for new switchboards.

L. M. ERICSSON TEL. MFG. CO.
BUFFALO, N. Y.

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From Here and There

NEBRASKA RAILWAY COMMISSION WILL TRY TO STOP DISCRIMINATION AGAINST INDEPENDENT TELEPHONE COMPANIES BY RAILROADS.

STATEMENTS that railroads in Nebraska are discriminating against Independent telephone companies by refusing to allow their instruments to be placed in railroad stations and freight offices, are expected to call forth vigorous action from the State Railroad Commission. Protests from subscribers to Independent telephone systems have been received, and the Railway Commission is now investigating the matter. It is said that in many of the Nebraska towns there are quite a large number of users of telephones who have occasion to speak with the railway officials who are on Independent lines only, and if only the Bell telephones were installed their interests would be seriously damaged. It is said that the comimssion seriously contemplates issuing an order requiring the use of Independent telephones in all railway stations where there is a demand for such instruments.

IDAHO STATE TAX LISTS SHOW MANY NEW TELEPHONE COMPANIES.

STATE AUDITOR BRAGAW announces that a much larger number of telephone and telegraph companies will pay taxes in Idaho this year than ever before. He has 53 companies on his list, a gain of more than 50 per cent over 1906. Under the Idaho law, the county assessors are not charged with the duty of assessing or collecting taxes on the property of railroads, telegraph or telephone companies. This duty falls to the state auditor or the State board of equalization, but with this delegation of authority the law bequeaths no method of ferreting out the companies. He may send notices to the company listed in the office of the secretary of the state, but unless they respond readily, or he goes out in person and hunts them down, he may not know whether they are real or fictitious organizations, or whether they have one mile or 1,000 miles of line in operation. Mr. Bragaw advised the county assessors to look up such corporations in order that his figures for this year might be accurate.

INDEPENDENT COMPANY AT GARRETT, IND., HAS MADE RAPID GROWTH.

A PUBLICATION devoted to the interests of the town of Garrett, a busy Indiana city of about five thousand population, speaks in the highest terms of the Garrett Telephone Company. This was organized in 1903 with the purpose of giving Independent telephone service, six of the local business men being at that time interested.

The exchange was opened with ten subscribers, six of whom were the organizers of the company. Although this start was not very encouraging, the merit of the company's service soon became appreciated, and the list of the subscribers has been steadily increasing. Rural lines have been built, new cable installed in the business district and every effort made to keep the company's plant in first-class condition.

From the very small beginning in 1903 the company has grown until it now has 32,000 feet of cable, 200 miles of aerial wire and 25 miles of rural lines in its plant. The number of stockholders has increased from the original six to the present number of fifty-three, and in the four years since its organization the number of subscribers has grown to fifty-four times the original ten. The success of the company is due in large measure to the confidence of the community in the Board of Directors, as well as to the efficiency of the management, and the interested co-operation of the employees. The board of directors is at present made up of J. B. Mager, L. D. Mager, C. N. McCully, J. Breckbill, S. B. McCullough, J. R. Lantz, Emil Hill, I. D. Moore, H. W. Mountz, W. W. Sharpless and W. H. Coffinberry. The plant is under the management of D. B. Van Fleit.

NEW INDEPENDENT EXCHANGE AT SPOKANE, WASH., NOW BEING CONSTRUCTED.

A CONTRACT for its new $60,000 building was awarded by the Home Telephone Company, of Spokane, Wash., a few days ago. This calls for the construction of the building proper, which must be completed by November 1. Excavation for the building was completed several weeks ago. The company has also put up poles in the city and laid underground conduits to be in readiness to put its plant in operation as soon as the exchange is completed. Cyrus Happy, vice-president of the Home Telephone Company, of Spokane, declares there is no truth in the recently circulated reports that the corporation will be bought out or absorbed by the Pacific States Telephone Company. He added: "The ordinance covering the granting of a franchise to the company by the city council provides that it cannot be sold to any corporation, company or individual. The franchise even prevents us from combining with any other company regarding rental and toll prices."

TELEPHONE COMPANY INDICTED FOR SELLING LIQUOR.

AT Jackson, Mississippi, the federal grand jury has returned indictments against the Cumberland Telephone Company and its manager, charging them with taking orders for whiskey to be shipped from Vicksburg, and receiving pay for the liquor. It is alleged that the company afterward transmitted the money to liquor houses. This placed the company in the position of selling liquor without a license.

TELEPHONE SYSTEMS BEING EXTENDED IN SOUTH AFRICA.

JOHANNESBURG and Durban have recently been connected up by a telephone trunk line, forming an extension to the South African telephone system which promises to considerably increase the interest in this means of communication in that section of the world. The London *Electrical Engineer* recently mentioned projects for further extensions, which will involve considerable outlays for supplies, and result in the building up of a system which will cover a considerable area, thus giving more adequate communication facilities than have heretofore been enjoyed.

Following the local development will naturally result in the establishment of connections between Johannesburg and Cape Town, which are not at present joined by a long distance telephone line. It is said that at last the farmers in South Africa are beginning to realize the benefits which they will derive from telephone service, and are thinking of taking more vigorous action to get in touch with one another. At the recent Cape Farmers' Congress at Oudtshoorn a resolution was passed requesting the government to permit farmers to run wires along existing fences at their own expense, and to connect them with the nearest post office free of charge, which, if granted, will do much toward telephone development on the Cape.

BELL RATE-RAISING OPPOSED IN LOUISIANA.

THE State Railroad Commission of Louisiana, which now has control of the telephone and telegraph lines as well as the railroads, is receiving numerous complaints against the Cumberland Telephone and Telegraph Company for advancing rates. The company has advanced rates in a dozen Louisiana towns within a month and the patrons do not propose to stand for it without a contest. The commission has summoned the officials of the telephone company to appear before it and give reasons why rates should be advanced and the outcome is being watched with much interest.

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CYCLOPEDIA OF APPLIED ELECTRICITY

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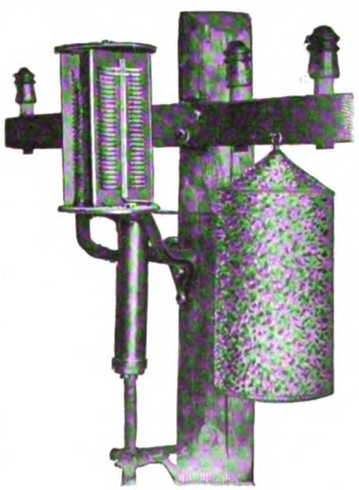

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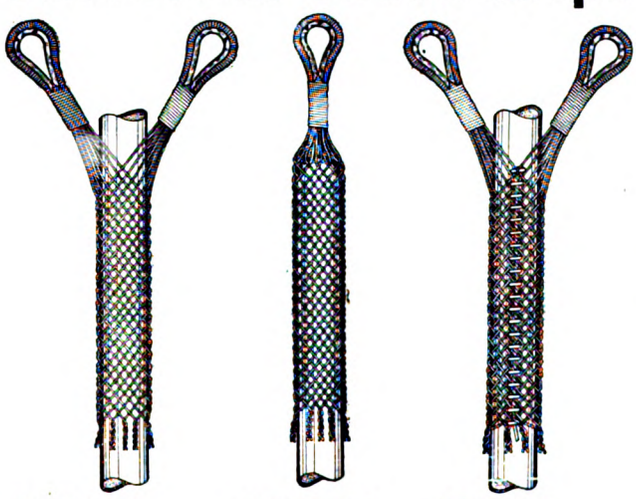

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In the Field of Invention

TELEPHONE RECEIVER.

Louis Steinberger, New York, N. Y., patents (No. 847,842; dated March 19, 1907; filed August 4, 1904; serial No. 219,452) a telephone receiver.

This patent covers a form of telephone receiver in which the permanent magnet, the connecting wires and the binding posts are embedded in an insulating composition, the whole mass having an outside casing of metal. The cap is made in the form of a polygon, the flat sides of which make it impossible for the receiver to roll if laid on an incline. The ear piece is convex so that it projects partly into the ear of the user.

TRANSMITTER.

Fred W. Fahrenfeld, Rochester, N. Y., patents (No. 837,457, dated December 4, 1906; filed August 31, 1905; serial No. 276,495) and assigns to the Simplex Telephone Equipment Co., Rochester, N. Y., a telephone transmitter.

This invention comprises a form of telephone transmitter having a convex perforated cap in lieu of the customary mouthpiece; two electrodes retained in a metallic case, one attached to a resilient diaphragm, the other attached to a solid plate, extending across the interior of the retaining shell, which holds it rigidly in position. The electrodes are provided with numerous projections in order to have large contact surfaces. There is provided, in the retaining shell a vent for the escape of air, so that the air within the shell may not by compression form a cushion, and thus retard the vibrations of the diaphragm.

MOUTHPIECE DISINFECTOR.

Robert R. Macgill, Baltimore, Maryland, patents (No. 844,949; dated Feb. 19, 1907; filed April 26, 1906; serial No. 313,838) a sanitary mouthpiece guard.

This invention provides an attachment for a telephone transmitter mouthpiece containing a roll of tissue, impregnated with a disinfectant, which may be pulled taut over the mouthpiece face. The attachment is secured to the mouthpiece by means of two projecting lugs and a thumbscrew.

TELEPHONE METER.

Newman H. Holland, Brookline, Mass., patents (No. 851,090, dated April 23, 1907; filed July 8, 1903; serial No. 160,608) and assigns to Charles Bate, Boston, Mass., a telephone meter.

This patent covers an arrangement at the subscriber's station, comprising an electro magnet, a polarized relay, a quick and a slow moving pawl, together with various cogged wheels and registering devices. It is the intention of the inventor to have this, together with a pole changing switch at the central office, so operate as to register a call in the calling subscriber's apparatus only upon the completion of a satisfactory conversation.

TELEPHONE SWITCH-BOX.

S. C. Houghton, Rome, N. Y., patent 849,615, April 9, 1907.

This patent covers a combination jack and hook switch box

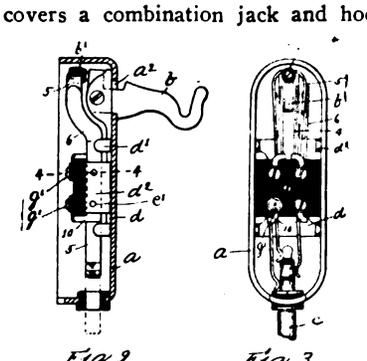

Fig 2. Fig 3.

particularly adapted for use as an extension switch-box in conjunction with a telephone of the hand micro type.

The jack springs, 5, 10, are arranged to make contact with the plug *C* when it is inserted through the jack opening in the bottom of the retaining case. The hand microphone is connected to this plug *C* by a flexible conducting cord, and is cut into circuit with the telephone line upon removal of the telephone from the hook *b* which causes a downward movement of the insulating knob *b'*, thus allowing springs 5 to make contact with springs 4.

TELEPHONE REPEATER.

N. G. Warth, Columbus, Ohio., patent 850,079, April 9, 1907.

This patent describes improvements in telephone repeating apparatus over patent No. 845,282, dated Feb. 26, 1907, granted to Mr. Warth and means whereby the inventor purposes to over-

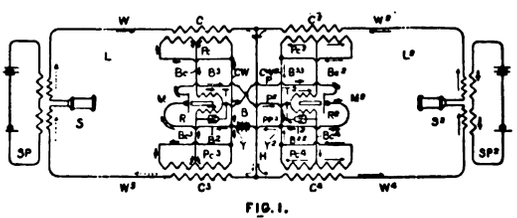

FIG. 1.

come the "howling" or "singing" that occurred in the systems described in the above patent and patents No. 791,655 and No. 791,656, granted to Mr. Herbert E. Shreeve, June 6, 1905, and November 6, 1906, respectively.

As shown in Figure 1, *S* and S^2 are the telephones at opposite ends of a long line with the repeating apparatus inserted in the line at a point of electrical balance.

C, C^2, C^3 and C^4 are repeating coils, *M* and M^2 the variable resistances of the repeating relays *T*, T^2.

AUTOMATIC CALLING DEVICE.

Frank A. Lundquist, Chicago, Ill., patents (No. 846,327, dated March 5, 1907; filed June 13, 1904; serial No. 212,325) a calling device for telephone exchanges.

This patent relates to a calling device for use in connection with an automatic system of subscriber selector-connecting arrangement at a central office.

Impulses of current are conveyed to the central office selecting device over wires in the usual manner and are set up by a rotating commutator in the instrument which is caused to revolve the desired number of times by an arrangement of gears and springs in coactance with an indicating device mounted on the face of the instrument. After the connection with the line desired has been secured the subscriber wanted is signalled by the calling subscriber by means of a hand magneto generator located in the instrument.

A switch is also provided for the purpose of allowing a subscriber on a party line to "listen in" on the line in order to ascertain as to whether the line is "busy" or not, and to allow the replacing of his receiver upon its hook without disturbing the connections of the persons already using the line.

INTER-COMMUNICATING SELECTOR.

Franz Wallock, Berlin, Germany, patents (No. 851,266, dated April 23, 1907; filed November 22, 1904; serial No. 233,866) a line selector for inter-communicating apparatus.

The feature of this invention is that the selector spring is not obliged to travel over the contact points of other lines on its return to the home point.

The switch arrangement is of the circular shape commonly used on inter-communicating instruments and the contact spring is so mounted on a retaining case, together with a hook for the hand microphone, as to be pressed away from the face of the switch contacts a sufficient distance as to escape all of them on its homeward journey, which is accelerated by the medium of a coiled spring contained within the case.

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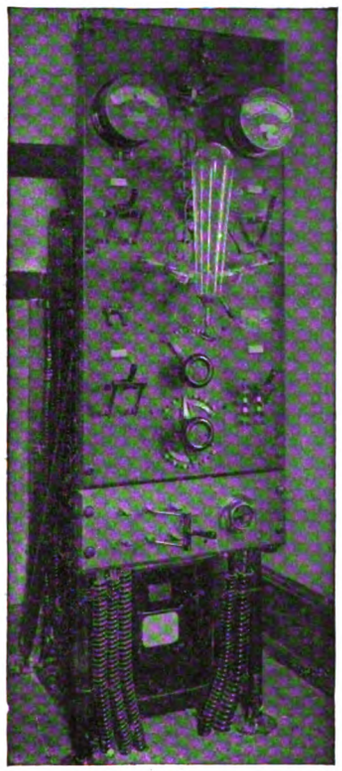

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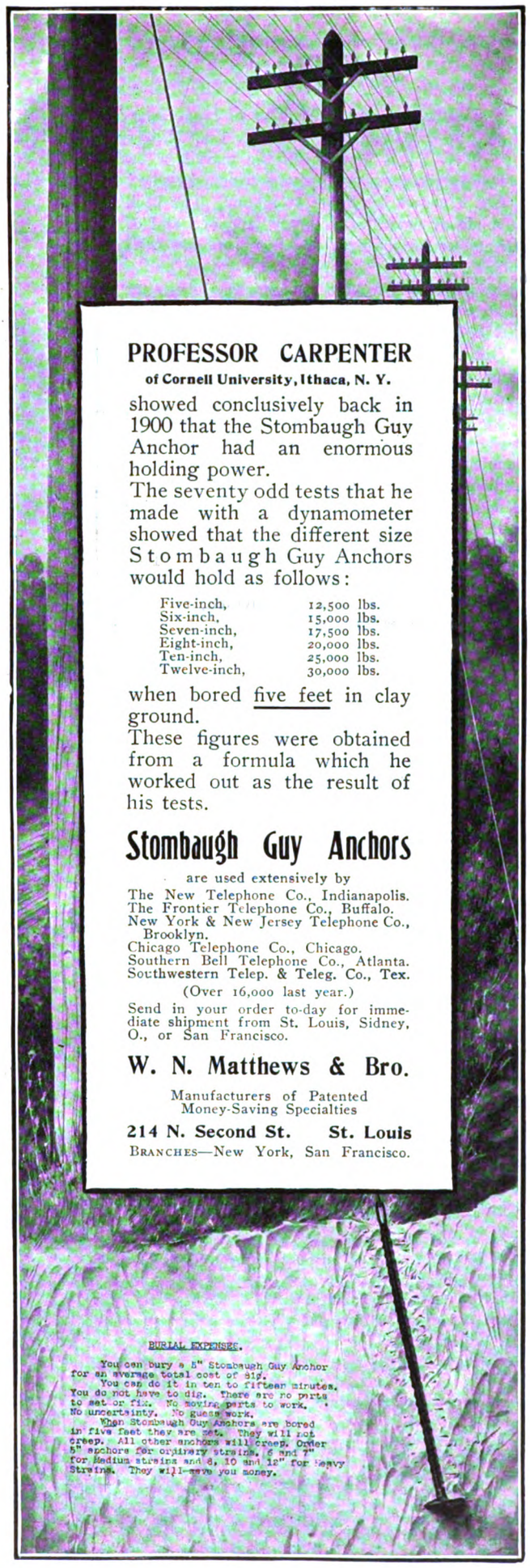

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From Shops and Factories

NEW APPARATUS FOR HOUSE SYSTEMS.

ASIDE from its regular line of long distance apparatus, the L. M. Ericsson Tel. Mfg. Co., Military Road, Buffalo, N. Y., is placing on the market a decidedly attractive private or house telephone, and a new battery bell to go with it.

Fig. 1 shows the house telephone. The back is made of drawn steel, finely japanned and of "Nouveau Art" design. On this is mounted the monitor bell, the terminals, push button and a suspension hook for the hand micro. The latter is attached to the instrument by a two-way plug and jack.

Only two wires are used between two stations, the third terminal being connected to the battery.

The apparatus is sold in pairs and is intended especially for private homes, and for easy communication between offices. It may also conveniently be used in hotels, large private residences, and apartment houses, in connection with an annunciator board.

The battery bell, Fig. 2, is extremely efficient and will ring loudly with only one dry cell. It has a drawn steel base, japanned black. A heavy nickeled gong covers the mechanism and makes it bug proof. From the start both of these novelties are said by the company to have taken the fancy of the customers and seem to be just what they have been looking for.

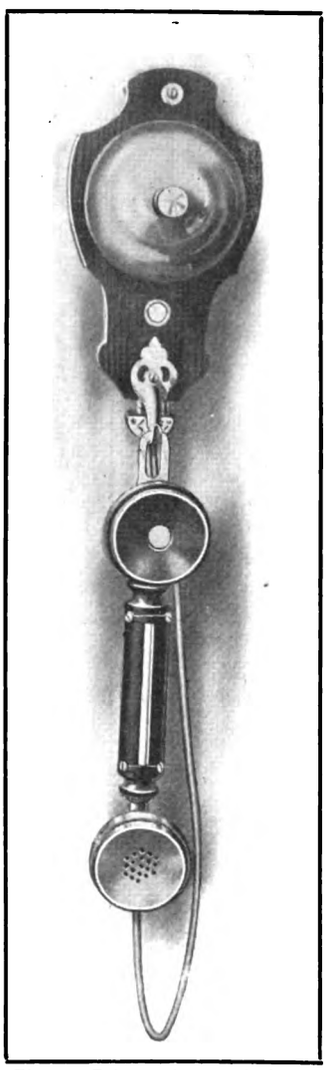


Fig. 1. Ericsson house telephone.

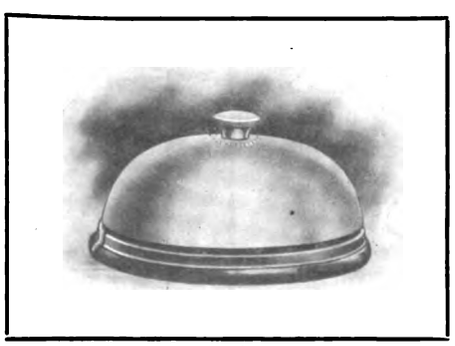


Fig. 2. Ericsson bell for intercommunicating sets.

W. N. MATTHEWS & BRO., 219 No. 2nd St., St. Louis, Mo., has secured for its exhibit at the Chicago Convention, Room 644 at the Auditorium Hotel. One of the exceptionally interesting features which will be shown will be a Stombaugh guy anchor embedded in clay, showing its appearance when set as in actual practice. Other features will be the Callahan cable roller, Hargis cable splicing joint and the Hold-fast lamp guard.

Those who are interested in the Hargis cable splicing joint will have an opportunity to see men put the joint together, and thus learn how the whole operation is performed from start to finish, seeing for themselves the saving in time which is effected by its use. To convince the doubtful that this joint is moisture proof, the company expects to show the fish tank tests which have been described in a previous issue of this journal. Souvenirs, which will be money savers, emphasizing the company's practice in dealing in money saving specialties, will be given out to visitors. The representatives chosen for this Convention are Messrs. Claude L. Matthews, O. R. Johann and Luther Hargis, the last being the inventor of the Hargis cable splicing joint.

THE UNITED STATES COIN REGISTER CO., Toledo, Ohio, will exhibit its well known Combined Cash Register and Pay Station, in Room 628, Auditorium Hotel, Chicago, during the International Convention.

THE CENTRAL TELEPHONE & ELECTRIC COMPANY, St. Louis, Mo., will have a nicely arranged exhibit in Room 616, at the Auditorium Hotel, directly across the hall from the elevator on the Convention Hall floor, at Chicago. A full line of telephone apparatus will be shown, and a number of the many specialties of its own manufacture, which are becoming so well known to the trade. The exhibit will be attended by Mr. J. S. Cuming, president; C. H. Wallis, vice-president; L. G. LeBourveau, sales manager, and several of his assistants.

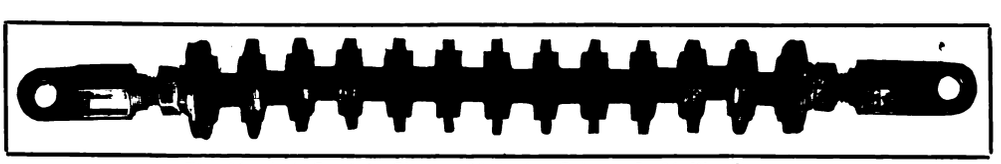
THE GOULD STORAGE BATTERY COMPANY, formerly No. 1 West 34th St., New York City, has recently removed its offices to Nos. 341-347 Fifth Ave., at the corner of 34th St. This is a more convenient location, and will give the company better conveniences for meeting its customers and transacting its rapidly growing business.

STROMBERG-CARLSON TELEPHONE MFG. COMPANY, Rochester, N. Y., will have an attractive display at the Convention. Two large rooms have been reserved, one of which will be fitted up as a reception room, and the other for the display of apparatus. The company intends to pay particular attention to the comfort of its customers, and will make careful provision to secure this end. In the exhibition room there will be displayed a small assortment of standard apparatus. In addition to this exhibit an automobile service will carry telephone men at half hour intervals from the Auditorium to the company's offices on Jackson Boulevard, where a much larger exhibit has been arranged, illustrating various forms of apparatus in service.

H. C. Slemin, advertising manager, has procured a few attractive souvenir postal cards for distribution. J. P. Cracraft, sales manager, Mr. Slemin and other representatives will have charge of the exhibit.

THE MANDREL CONDUIT CLEANER.

Cable men who have met with difficulty in cleaning ducts properly before drawing in cable will be interested in the Mandrel conduit cleaner made by Colman J. Mullin Company, 430 Kent Ave., Brooklyn, N. Y. This is designed and manufactured under the direction of Mr. Mullin, who is an experienced and practical telephone man. All that is necessary to clean a duct is to pull through the cleaner, which carries at intervals a series of leather discs mounted upon a flexible shaft. The flexible shaft makes it possible to draw the cleaner around bends, and the plurality of leather discs, separated by considerable intervals, leaves room for all of the dirt which may be in the duct in the spaces between them, and there are



The Mandrel Conduit Cleaner Made by Colman J. Mullin Company.

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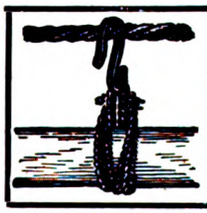

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enough discs to insure perfect cleaning. Provision may be made to renew the leather washers, thus securing economy. Full information concerning this device may be obtained by writing to the manufacturers.

FEATURES OF THE EASOPHONE.

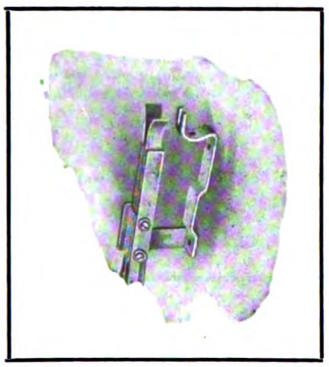

Fig. 1. Arrangement of switch springs in Easophone.

SINCE the placing upon the market of the Easophone, a new hand telephone, manufactured by The Wire & Telephone Company of America, Rome, N. Y., a great deal of interest has been shown in some of its decidedly novel features. Among these the construction and operation of the hook switch deserve especial attention. This is so arranged that the hook may be placed upon either side of the box by a very simple operation, which does not require the use of tools. The switch, made in the form of a key, has no rubbing contacts, which are now generally believed to be objectionable. It is controlled by a fibre cylinder carried upon a rotating shaft which extends across the box, as shown in Fig. 2.

When the telephone is upon the hook a stud upon the rear of the hook engages a pin upon the rotating shaft, and the weight of the hook, balancing the tension of the spiral spring attached to the shaft support and to the shaft itself, maintains the cylinder out of engagement with the switch. As soon as the hook is removed the tension of the spring causes the rotation of the shaft to bring the cylinder into the space between the movable springs, thus effecting the changes in the contacts to bring the receiver and transmitter into circuit.

In Fig. 2 it will be seen that the right hand support for the shaft has an opening to receive a pin which holds the hook. All that is necessary to replace the hook upon the opposite side of the shaft is to withdraw the pin from its position shown in illustration, insert the hook in the right hand support and replace the pin.

The single coil ringer used is so constructed as to occupy the minimum amount of space. There is no necessity for adjusting interior parts to secure the best ringing; only the gongs need be moved, and they may be set by a screw driver from the outside of the box.

Line connections are brought into binding posts of a new type. These Houghton binding posts are illustrated in Fig. 4. The opening for the wire is conical, and the point of the pin stud is also conical, making a contact which is firm, and at the same time designed so that there is no cutting or creeping of the wire. Connection to the interior of the instrument is made through the solid rubber block in which the posts are mounted by means of tubes, which permit of a firm soldered joint with interior wiring, and by the method of their attachment prevent any twisting of the binding posts.

At the Chicago Convention these instruments, and also rubber covered wire and magnet wire will be exhibited in Room 647, at the Auditorium Hotel.

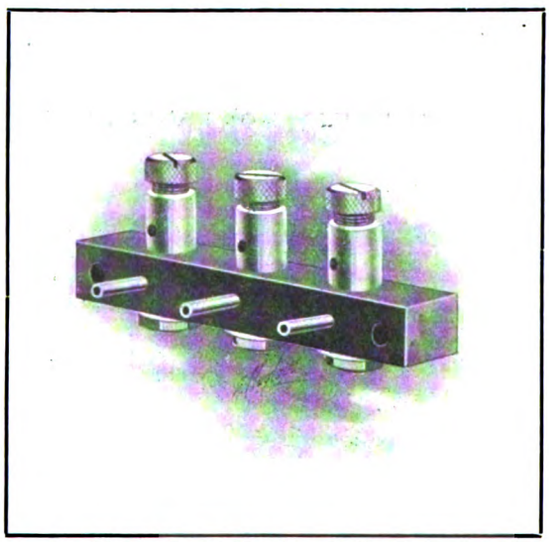

Fig. 4. Set of Houghton binding posts.

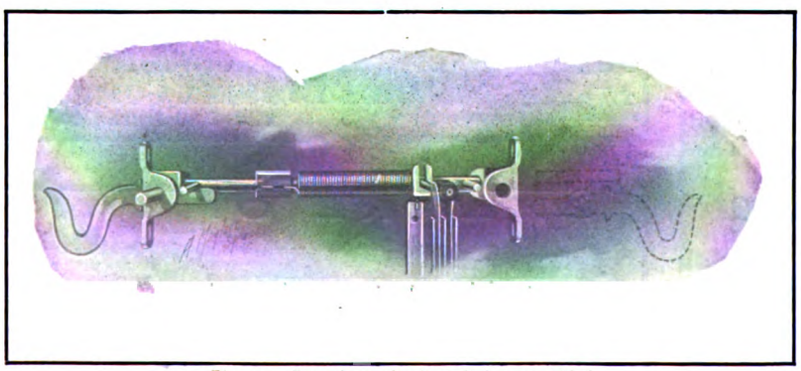

Fig. 2. Easophone hook switch, assembled.

RATE-MAKING FOR INDEPENDENT TELEPHONE COMPANIES.

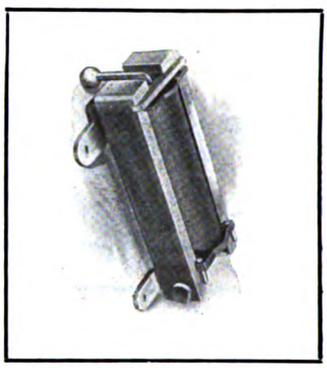

Fig. 3. Single coil ringer.

WHAT is agreed by many Independent telephone men to be a much needed organization has been perfected and has incorporated under the laws of Ohio in the name of The Davis Telephone Rate Adjusting Company, with offices in Cleveland.

Mr. H. L. Davis, from whom the company takes its name, and who has been made vice-president and general manager of the new company, is a man of long experience in the telephone field, having first worked for the Bell company as solicitor and special agent, entering into the Independent field some seven years ago.

All his men are chosen for their experience as solicitors and their ability to present an intelligent telephone talk. They are permanently employed and are drilled along lines intended to bring the best possible results.

A feature of the new company is to guarantee the class of business secured, thus saving any company the expense of paying for names of persons who have not subscribed at all, which often occurs with inexperienced or dishonest solicitors.

Prior to the organization of the new company Mr. Davis was unable to take more than two or three canvasses at one time, but he now states that he has perfected an organization which enables him to handle any number and give his personal attention to every one. The company is having printed a booklet which tells more fully about the object of its organization, and plans for conducting its work and which will be sent to any address upon application to the Cleveland office, 708 Electric Building, Cleveland, Ohio.

The officers of the new company are H. E. Scott, president; W. G. McCullough, sec. and treas., and H. L. Davis, vice-president and gen'l manager.

THE CENTURY TELEPHONE CONSTRUCTION Co. is now located in its new factories, 1738 Elmwood avenue, Buffalo, N. Y., where it has in operation one of the largest, most complete and up-to-date plants for the manufacture of telephone apparatus in the country.

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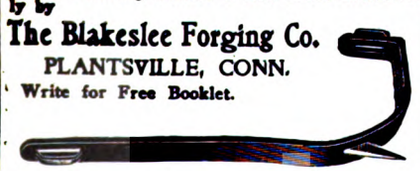

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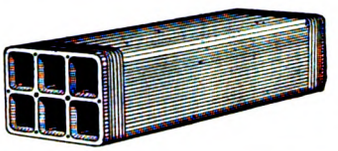

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Good News—and It's All New

NEW COMPANIES.

NEW PRAGUE, MINN.—The Union Hill Telephone Company, Union Hill, P. O. address New Prague, Minn., has been incorporated with a capital stock of $8,000. The incorporators are C. A. Backman, Waterville; Joseph Widmer, E. M. Widmer, New Prague.

CRETE, NEB.—Articles of incorporation have been filed by the Crete Telephone Company, whose intention it is to build and operate a telephone system in this city. It has a capital stock of $100,000, and among those interested in the enterprise are F. H. Woods, C. W. Nunemaker, B. G. Miller and others.

COLEBROOK, N. H.—The Southern Coos Telephone Company, with a capital stock of $10,000, has filed articles of incorporation.

PALISADES PARK, N. J.—The Radio Telephone Company, with an authorized capital stock of $2,000,000, has been incorporated by Lee De Forest, Samuel E. Darby, Henry Froukel, Walter J. Scott and Fred W. Southemer.

HOWARD, N. Y.—An Independent telephone company, to be known as the Howard & Hornell Telephone Company, has been incorporated with a capital stock of $740, and the following directors elected: W. B. Alden, I. S. Goff, L. I. Sharp, Howard.

PRATTSVILLE, N. Y.—The Johnson Hollow Telephone Company, Prattsville, has filed articles of incorporation. The capital stock is placed at $500, and the directors are Jacob Latz, M. T. Speenburgh, S. P. Ives, Roxbury, Delaware county.

EDINBURG, N. D.—A new Independent telephone company has been organized at this city under the name of the Edinburg & Tiber Telephone Company, and the following officers elected: President, Henning Gunhus; secretary-treasurer, O. Fauskee; directors, Dan Halvorson, A. N. Brunsvold, Jorgen Nygaard. Construction on the company's system will be commenced at a very early date.

ALINE, OKLA.—Articles of incorporation have been filed by the Valley Green Telephone Company of Aline. It has an authorized capital stock of $1,000, and the incorporators are F. M. Piburn, J. H. Elkins and J. D. Durham.

BINGER, OKLA.—The White Bread Telephone Company, with a capital stock of $600, has been incorporated. Among the incorporators are C. T. McSpaerin, of Cox; O. E. Bare, H. L. Proteet, Gracemont; M. V. Stewart, C. S. Daugherty and D. C. Costello, of Binger.

QUINLAN, OKLA.—The Quinlan & Cedardale Free Exchange Telephone Company has filed articles of incorporation. It has a capital stock of $5,000, and the incorporators are Ben Huff, Henry Lamsey, John Johnson and Samuel Catlett.

REEDING, OKLA.—The Reeding Telephone Company, of Reeding, has been incorporated with a capital stock of $1,000, and among the incorporators are G. T. Dixon, of Okarche, G. B. Caron and B. F. Cole, of Reeding.

TEXHOMA, OKLA.—The Texhoma Telephone Company has been incorporated with a capital stock of $5,000, and the following directors elected: T. E. Osborne, J. F. Osborne and G. Osborne.

VERMILION, S. D.—On account of the poor service rendered by the Northwestern Telephone Company, the citizens of Vermilion are organizing an Independent telephone company, whose intention it is to construct a telephone system, which will eventually be turned over to the municipality. The chief worker in the new movement is ex-Governor Lee.

DALE, TEXAS.—An Independent telephone company has been organized at Dale, whose intention it is to erect a local exchange. Among those interested in the enterprise are J. A. Ward and others.

SPRINGTOWN, TEXAS.—The Springtown Telephone Company has been incorporated with a capital stock of $5,000. Among the incorporators are J. T. Roberain, W. A. White and C. Malone.

COLFAX, WASH.—Articles of incorporation have been filed by the Lone Pine Telephone Company, of Golden School House, near Colfax. It has a capital stock of $1,200, and the incorporators are William Richardson, E. L. Ross and H. E. Davis.

SCHLEISINGERVILLE, WIS.—The Washington County Telephone Company, with a capital stock of $1,500, has been incorporated by John F. Kramer, Charles D. Storck and M. Maxam.

FRANCHISES.

COFFEYVILLE, KAS.—The Kansas City Long Distance Telephone Company has applied for a franchise at this city.

THIEF RIVER FALLS, MINN.—A syndicate of business men, composed of T. P. Hamre, D. B. Bakke, C. M. Evenson, C. C. Jackson, Henry Grundy and George Stearns, has applied to the city council for a franchise to erect and operate a telephone exchange. The city is to have the privilege of buying the plant at the end of seven years by paying the cost of construction. The proposed plant is guaranteed to be in good working order by May 1, 1908.

WARREN, N. H.—The Baker's River Telephone Company, of Warren, has been granted a franchise at Littleton, where it will install a common battery system. It has also received a permit in Franconia, N. H., and will construct lines through that town and through Franconia Notch.

GALLATIN, TENN.—A franchise has been granted in Gallatin to the Home Telephone Company, and work is to commence at once on lines from Westmoreland, where the company has an exchange in operation, to Gallatin.

CASTLE DALE, UTAH.—The Green River Telephone Company has been granted a franchise to construct and operate a telephone system on the highways of Emery county.

FINANCIAL.

YELLVILLE, ARK.—The Yellville Telephone Company has declared a dividend of 10 per cent.

TAMPICO, ILL.—The Tampico Farmers' Mutual Telephone Company is considering the advisability of increasing its capital stock from $6,000 to $10,000.

CORINNA, ME.—The capital stock of the West Penobscot Telephone & Telegraph Company has been increased from $10,000 to $50,000.

JACKSON, MINN.—A dividend of 6 per cent. on its stock, payable July 1st, has been declared by the Jackson Telephone Company.

MINNEAPOLIS, MINN.—The directors of the Tri-State Telephone Company have declared the sixteenth quarterly dividend at the rate of six per cent. per annum, payable June 1st, 1907, to stockholders of record of May 20th, 1907. The company under its guarantee will also pay the twenty-first quarterly dividend of the Twin City Telephone Company at the stipulated rate.

DILLER, NEB.—At the annual meeting of the Diller Telephone Company a 15 per cent. dividend was declared, and the sum of $2,226 distributed among the stockholders.

WARREN, N. H.—The Baker's River Telephone Company has called a meeting of the stockholders to increase the capital stock to $20,000.

CHENANGO FORKS, N. Y.—The stockholders of the Chenango Valley Telephone Company, at a meeting recently held at Chenango Forks, voted to increase the capital stock from $7,000 to $10,000.

CHESTERHILL, O.—The capital stock of the People's Telephone Company has been increased from $20,000 to $50,000.

MECHANICSBURG, O.—The stock of the Mechanicsburg Telephone Company has been increased from $35,000 to $50,000.

NEW CASTLE, PA.—A $25,000,000 mortgage has been filed upon all of the properties of the American Union Telephone Company by the Fidelity Title & Trust Bank of Pittsburg. This money will be used by the Independent company in making improvements.

BELOIT, WIS.—The Beloit Telephone Company has declared a dividend of 6 per cent.

ELECTIONS.

MASON CITY, ILL.—The following officers have been elected by the Mason City Independent Telephone Company: C. A. Stone, president; H. F. Reason, vice-president; J. F. Culp, secretary; W. A. Grandy, treasurer.

NEWTON, IA.—The Murphy Mutual Telephone Company has elected Geo. W. Shelly, president; J. N. Livingston, treasurer; J. W. Murphy, secretary; J. H. Zink, C. C. Garver, E. L. Snyder, Bert Squires, J. F. Wheatcraft, directors.

IOWA, LA.—The following are the officers of the Iowa Telephone Company, Ltd.: J. F. Denison, president; Geo. Goodrich, vice-president; B. F. Waitt, secretary; A. N. Gibbs, treasurer; and these together with A. J. Findlay, H. L. Longenbach, A. T. Jones, S. Petticrew and F. G. Petticrew comprise the board of directors.

DETROIT, MICH.—The Home Telephone Company has elected the following directors: Henry Koehler, Hugo A. Koehler, Max Koehler, A. W. Lambert, C. Marquard Foster, Henry C. Stifel, S. B. Jeffrey, J. J. Goodyear and A. N. Edwards, of St. Louis; H. C. Potter, Jr., G. E. Lawson, W. T. Barbour, F. T. Moran, J. M. Dwyer and W. B. Woodbury, of Detroit.

UNIONVILLE, MO.—At a meeting of the Board of Directors of the Putnam County Telephone Company the following officers were elected: J. N. Comstock, president; H. L. Holman, vice-president; G. E. McCutchen, secretary; L. P. Roberts, treasurer; J. H. Holman, business manager.

MISCELLANEOUS.

GRISWOLD, IA.—The Farmers' Mutual Telephone Company, which has

WANTED—SPECIAL CORRESPONDENTS

OWING to the rapid growth of the Independent telephone movement in all sections of the country, we have openings for special correspondents in every State to work in conjunction with our already efficient corps. Matter similar to that in our Message and Operating Field pages is especially desired. For details address the Editor.

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The Independent Telegraph

The Natural Ally of the Independent Telephone

To all Interested in the Independent Telephone Movement:

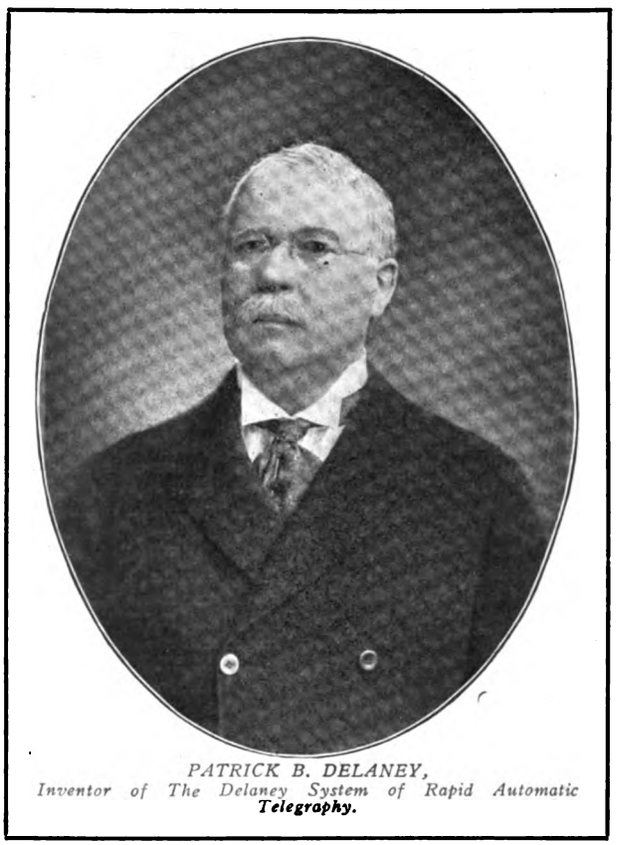
The Telepost Company, recently incorporated with a capital of $18,000,000, is rapidly organizing to give the American public what it sorely needs—cheap, quick telegraphy. By means of the only device that can utilize fully the carrying capacity of a wire—the Delany System of Rapid Automatic Telegraphy—the new and revolutionary telegraph will take its place with the telephone in the very forefront of public conveniences and necessities.

Long continued use and actual commercial work under all kinds of conditions have demonstrated conclusively that the Delany system is highly practical, thoroughly practicable and soundly commercial. Its economic energy is proved by the fact that it gets as great service from one wire as the Morse companies get from seventeen with the aid of the quadruplex, or from twenty-seven with the duplex, or from sixty-six when they have to depend upon the Morse simplex, as they do for 99 per cent of their service. The Delany system works undisturbed in all weathers, even when the other methods are completely out of commission.

The Telepost Company will carry the 50-word telepost or the 25-word telegram between any two of its offices for 25 cents. One price everywhere and anywhere in the United States.

The Delany system works over telephone circuits without the slightest interference with the latter form of service.

For the telephone companies not to get a profit from the telegraphic use of their wires would be shortsighted. To get any but the largest possible would be poor business. The Telepost Company can and will yield a larger return to the telephone companies than either of the telegraph companies could afford to give, or than the telephone companies themselves could earn by doing a telegraph business with any of the methods open to them.



PATRICK B. DELANEY,
Inventor of The Delaney System of Rapid Automatic Telegraphy.

Naturally, the Independents and the Telepost should have a close working union. The lines of the Independents should increase the wire mileage of the Telepost, and the big trunk lines of the Telepost should increase the long distance facilities of the Independents.

In order to make it impossible for any adverse interest to have anything whatever to do with the management of the Telepost, the voting power of the entire issue of stock has been placed in a voting trust, consisting of the following well-known men:

Hon. John W. Goff, New York, Judge of the Supreme Court; S. S. McClure, New York, editor and founder of *McClure's Magazine;* H. D. Critchfield, Milwaukee, Wis., president Milwaukee Independent Telephone Company; F. W. Shumaker, New York, treasurer Sterling Debenture Corporation; H. Lee Sellers, New York, secretary R. H. Sellers Company.

It will require the concurrent vote of all five to sell any of the rights, patents or other properties of the company. The Lincoln Trust Company, of New York City, acting as the agent of the above voting trust, will issue to the purchasers of stock its negotiable receipts, equivalent to the actual stock in every particular, excepting the right to vote.

The Board of Directors, as thus far made up, consists of:

Captain W. J. Barnette, U. S. N., Washington, D. C., General Board Navy Department; A. K. Brown, Chicago, Ill., president Kenwood Trust & Savings Bank, Chicago, Ill.; John M. Carrere, New York, Carrere & Hastings, Architects; Thomas Conyngton, New York, Conyngton & Harrison, Attorneys; H. D. Critchfield, Milwaukee, Wis., president Milwaukee Independent Telephone Company; R. H. Sellers, H. Lee Sellers, New York; C. H. Silliman, New York, founder Land Mortgage Bank of Texas, Ltd.; Hon. Wilson H. Fairbank, Warren, Mass., ex-Senator Massachusetts.

The Sterling Debenture Corporation, Brunswick Building, Madison Square, New York, whose officers are wide-awake men with reputations of long standing for the highest integrity and ability, are to co-operate with us and will have the exclusive handling of the shares offered for sale. They will furnish sufficient funds to build an installation that will put the Telepost Company on a paying basis from the start and lead to its rapid extension.

We feel that it is due to the Telepost, to you and to ourselves, that we lay our plans first before you. In our arrangements with the Sterling Debenture Corporation we stipulated that no stock should be offered to their customers until we had reached as many as possible of the officers and shareholders of the Independents and given them an opportunity to secure as much of the Telepost as they cared to own.

This is not, however, in any sense a solicitation to you to buy stock of the Telepost Company. Every share the Sterling Debenture Corporation offers for sale will find a ready purchaser among their many customers; but we tell you frankly that we hope every available share offered will be taken by the Independents, and that you and we shall own the Telepost.

Our object in this announcement is simply to lay everything before you, as is due you, considering our many mutual interests and possibilities, so that no one can ever say that we had passed over members of the same family and made the first offer to strangers.

Mr. Delany's and our long desired plan of giving to and preserving for the American public a telegraph service worthy the name and the nation is now to be consummated, and we are seeking to make our first announcements to you, our allies, in the Independent field.

We shall be pleased to send you a prospectus upon application.

Yours very truly,

R. H. SELLERS COMPANY,
225 Fifth avenue, New York City.

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been granted a franchise at this city, expects to take over the lines of the Musson Company, the consideration being $7,500.

CLAY CENTER, KAN.—The local telephone system, formerly owned by C. W. and P. F. Trice, has been taken over by the Clay Center Telephone Company. The new company is composed of H. O. Axtell, William Docking, W. H. Fletcher, P. M. Conrad, G. M. Stratton, Lewis Kreeck, C. W. Trice and P. F. Trice. It is to be capitalized at $40,000; $20,000 preferred and $20,000 common stock. Plans are being made to greatly improve and extend the system and it is estimated that about $15,000 will be expended in this work.

OWINGSVILLE, KY.—The plant of the Owingsville & Wyoming Telephone Company has been taken over by the Bath Home Telephone Company, whose intention it is to improve the system.

DOWAGIAC, MICH.—The Cass County Home Telephone Company is now building seven exchanges in Cass county. Each exchange will have its distributing system of the all-cable type. Connections with the Independent long distance systems on the north and south will be made with 200 miles of new copper toll line.

This company has recently been organized by M. W. Briggs, of Delta, O., who will act as general manager. Besides having a large amount of capital from Toledo, O., the company has several strong local men as stockholders.

FAIRMONT, MINN.—The Fairmont Telephone Company has sold its exchange at Heron Lake to the Fulda Telephone Company, of Fulda, the consideration being $4,000.

BLUE SPRINGS, NEB.—The Blue Springs Telephone Company is considering the advisability of forming connections with the New Home Telephone Company at Wymore.

BEDFORD, PA.—The entire stock of the Bedford County Telephone Company has been taken over by F. D. Houck, general manager of the American Union Telephone Company. Extensive improvements are to be made in the plant, including the installation of common battery exchanges and the establishment of long distance connections to other important exchanges in Pennsylvania.

ORMSBY, WIS.—The Union Line Telephone Company, of Ormsby, expects to form connections with the Antigo Telephone Company at Deerbrook.

PERSONAL.

CARL ARMSTRONG has been appointed manager of the exchange of the Central Union Telephone Company at Galena, Ill.

ISAAC B. CARPENTER, who has been superintendent of the traffic department of the Providence Telephone Company, Providence, R. I., has recently assumed additional duties, having been placed in direct charge of several of the most important exchanges of the company.

P. H. HOPKINS has recently been appointed contract agent of the Rocky Mountain Bell Telephone Company at its headquarters at Salt Lake City, Utah.

P. H. IRWIN has been appointed superintendent of the Salt Lake City division of the Rocky Mountain Bell Telephone Co.

EDGAR P. MILLER has been appointed manager of the Saline County Telephone Company at Marshall, Mo.

W. W. RIDER, of Allentown, Pa., has been appointed superintendent of Division No. 3 of the Consolidated Telephone Companies, and will have charge of the company's interests in Reading, Mauch Chunk, Lehighton, Allentown, Bethlehem and Easton.

With the Builders

MASON CITY, ILL.—The Mason City Independent Telephone & Telegraph Company expects shortly to begin the construction of its system in this city.

HUNTINGTON, IND.—Extensive improvements and additions are planned by the United Telephone Company in its system at Huntington, and it is its intention to make the exchange at this city one of the best and most extensive in the state.

WAUKON, IA.—New lines are being built by the Standard Telephone Company in Waukon.

AVON, ILL.—The Avon Mutual Telephone Company is planning for the rebuilding of its system, and expects to make its plant up to date in every particular.

BARRINGTON, ILL.—Lines north of Barrington are being constructed by the Lake County Telephone Company to take care of its increasing business.

NATALBANY, LA.—The New Orleans, Natalbany & Natchez Railroad, which has just completed a telephone line from Natalbany to Montpelier, expects to erect a line to Pine Grove.

DOWAGIAC, MICH.—The Home Telephone Company, which is at work on its plant in this city, contemplates the construction of lines to Cassopolis, Marcellus, Volinia, Wakeless and Vandalia.

DIXFIELD, MAINE.—The Northeastern Telephone Company is considering the advisability of extending its lines from Dixfield to Carthage.

KINDERHOOK, MICH.—A telephone system is being constructed at Kinderhook by the Himebaugh Telephone Company.

LANSING, MICH.—A new telephone exchange building is to be erected by the Citizens' Telephone Company.

HALLOCK, MINN.—Additions to its system are being made by the Kittson Telephone Company.

CASSVILLE, MO.—The Hailey Telephone Company, of Hailey, has built a line to Cassville.

MONIDA, MONT.—The Centennial Telephone Company, which was recently organized, expects shortly to commence work on its lines from Monida to Lakeview. A number of branch lines to the north side of the Redrock River are also to be constructed.

WYMORE, NEB.—Many improvements in its plant at this city are contemplated by the New Home Telephone Company.

CANTERBURY, N. H.—Many improvements and extensions in its system are being made by the Canterbury & Boscawen Telephone Company.

JEFFERSON, N. H.—The Jefferson Telephone Company is extending its line on the Cherry Mountain, and is otherwise improving its plant.

PLYMOUTH, N. H.—The Baker's River Telephone Company, Warren, is constructng local and trunk lines from Plymouth to North Woodstock and Lincoln. An exchange is to be installed at North Woodstock and lines built from Warren to Woodsville.

SILVER CITY, N. M.—To take care of its increasing business, the Grant County Telephone Company has installed a new switchboard. Other improvements in the company's plant include the rebuilding of its line from Silver City to Santa Rita, Hanover and Fierro, and the construction of new lines to Leopold, Tyrone, Comanche, Copper Gulf and other points. Upon the completion of these extensions the company's plant will be a very complete one.

RAVENNA, N. Y.—The lines of the Ravenna & Medway Telephone Company are being extended to take care of new business.

BLACKSTONE, N. C.—The Yadkin Valley Telephone Company, of Blackstone, is preparing to erect lines to Patterson and Lenoir.

SMITHFIELD, N. C.—The construction of the plant of the Johnson County Independent Telephone Company has been commenced.

TAYLORSVILLE, N. C.—The People's Telephone Company is building a line from Taylorsville to Statesville, to connect with the Iredell Telephone Company, the anti-monopoly company that put the Bell out of business in Statesville. When the line is completed connection will be secured between the towns of Wilkesboro, Statesville, Lenoir, Taylorsville and other smaller towns along these routes.

MANDAN, N. D.—About six thousand dollars are being expended in improvements by the Mandan Telephone Company, and it is expected that its plant will be one of the best in the state when it is completed.

ASHLAND, O.—It is the intention of the Star Telephone Company to expend $50,000 in the improvement of its system.

CORVALLIS, ORE.—The Home Telephone Company is constructing a trunk line from Corvallis to Peoria.

WASHINGTON, PA.—A line from Washington to Waynesburg is being erected by the State Mutual Telephone Company.

CHATTANOOGA, TENN.—A telephone system between Chattanooga and Oakdale has been completed on the Queen & Crescent R. R., and it is its intention to extend the system as far north as Cincinnati.

PETERSBURG, VA.—The Petersburg Telephone Company, which has recently erected a very complete exchange at this city, is replacing all of its old telephones with new instruments.

TERRA ALTA, W. VA.—The Terra Alta Telephone Company is making many improvements in its system.

AMHERST, WIS.—It is the intention of the Amherst Telephone Company to extend its lines from Custer to Stockton, and later to Ellis and Polonia.

MADISON, WIS.—The Standard Telephone Company is building a line from Madison to Stoughton and McFarland.

WHITE OAK, WIS.—The White Oak Telephone Company is extending its system in Shullsburg.

CALGARY, ALB., CAN.—By a vote of 224 to 52 the citizens decided in favor of raising $125,000 by the sale of debentures for the installation of a municipal telephone system. Address City Engineer Thorold or Mayor Cameron.

STETTLER, ALB., CAN.—At a meeting of the town council it was unanimously decided to ask the provincial government to install a telephone system at this city. Address Will Godson.

BRANDON, MAN., CAN.—Hon. J. H. Howden, minister of telephones for Manitoba, states that construction will be commenced in June on the installation of a government telephone system in Brandon.

DELORAINE, MAN., CAN.—The council of the municipality of Brenda is considering the installation of a telephone system. Address Alex. Innis, Deloraine, Man.

ELGIN, MAN., CAN.—At a meeting of the council of the municipality of Whitewater it was decided to ask the government for the necessary information for the construction of a rural telephone system. Address J. Donley, Minto, Man.

WINNIPEG, MAN., CAN.—On account of the announcement by the Bell company that an advance in rates would be made, the Hon. J. H. Howden, minister of telephones, has stated that plans are being prepared for an exchange to be built at this city by the government, and construction of a government system will commence in June.

WOLSELEY, SASK., CAN.—The city council is considering the advisability of installing a municipal telephone system. Address R. A. Magee.

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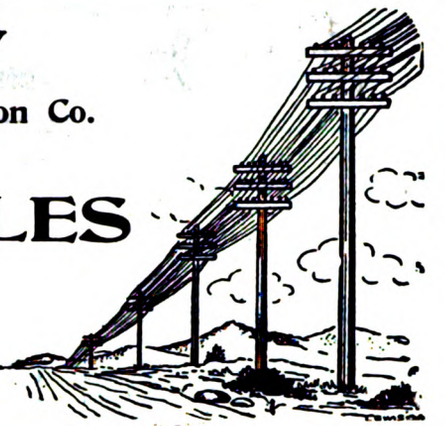

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CHICAGO, ILL.

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The Lindsley Brothers Co.

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Camden, New York
Northern Electric and Machine Co., Brooklyn, New York. Selling Agents.

CROSS ARMS CAR LOTS OR LESS
YELLOW PINE OR CYPRESS
DIRECT FROM MANUFACTURERS
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Canadian Cedar Telegraph, Telephone and Electric Light Poles
All lengths, always in stock and shipped direct from our yards in Canada.
J. B. FARWELL & SON, MAIN OFFICE, **Oswego, N. Y.**
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White Cedar POLES
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POLES
20 and 25 foot lengths for rural telephone lines a specialty.
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CRESCENT LUMBER CO.
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Chestnut, Red Cedar and Cypress
Lengths 16 to 65 feet
J. P. MEREDITH CEDAR CO.
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Plans, Specifications and Estimates Promptly Furnished
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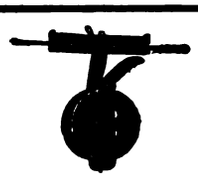
It will save you money if you write us before placing your order anywhere. Same thing applies to Pins, Brackets and Poles. Quick shipments if you wish. Get the Bissell Book—write for prices.
THE F. BISSELL COMPANY, TOLEDO, O.
226-230 HURON STREET

WHITE CEDAR **POLES** Longest Lasting Best Grade
OUR NEW STOCK COMING IN 100,000 TO 150,000 BY APRIL 1st
26 YEARS HAVE WE BEEN PRODUCING POLES. WRITE US
Yards { Omer, Bay City and Boyne Falls
W. C. Sterling & Son Co., Monroe, Mich.

WHITE CEDAR POLES.
Buy from the Producers and Save Jobbers' Profits.
PENDLETON & GILKEY, - Minneapolis, Minn.

SAMUEL G. McMEEN KEMPSTER B. MILLER
McMEEN & MILLER
ENGINEERS: CONSTRUCTORS
Telephone and Telegraph Properties
MONADNOCK BLOCK CHICAGO

SECURITY TROLLEYS FOR STRINGING CABLES



When you say Security—you've hit the nail right on the head. They are secure. And they're cheaper, stronger, run easier, and better than any other trolley. Make us prove it.
Security Trolleys will fit any size cable. Made of Malleable Iron. The weather cannot harm them. Write us for prices—get the Bissell Book.
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WESTON
STANDARD PORTABLE DIRECT READING
VOLTMETERS, AMMETERS, MILLIVOLTMETERS, VOLTAMMETERS, MILAMMETERS, OHMMETERS, PORTABLE GALVANOMETERS, GROUND DETECTORS AND CIRCUIT TESTERS.
Our Portable Instruments are recognized as THE STANDARD the world over. Our STATION VOLTMETERS AND AMMETERS are unsurpassed in point of extreme accuracy and lowest consumption of energy.
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Main Office and Works, Waverly Park, NEWARK, N. J.
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Weston Standard Portable Direct Reading Voltmeter.

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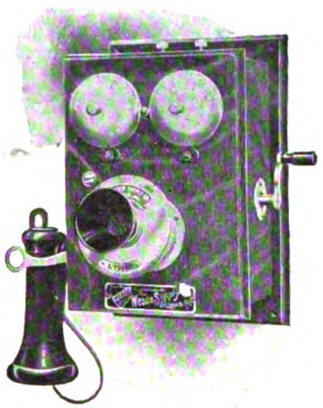
The Smallest Magneto Telephone



DIMENSIONS.

Width	5	inches
Depth	4	inches
Height	7¼	inches

The Wesco Long Distance Residence Telephone Model No. 51 is the smallest and most compact Magneto Telephone made.

It is especially designed for use in residences where wall space is limited and where ornamental design and beauty of finish are as essential as the efficiency of the working parts.

It is equipped with our Standard Receiver, Hook-Switch, Long Distance Solid back Transmitter, 80 ohm ringer and 3-bar Generator, each part being the best that money can buy. It is also made with 4-bar Bridging Generator with 1,000, 1,600 and 2,000 ohm ringer movement.

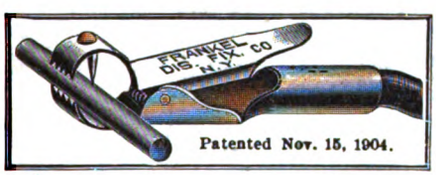
Write for General Telephone Supply Catalog and our monthly net price list.

"EVERYTHING ELECTRICAL"

THE WESCO SUPPLY COMPANY

Branch Warehouse: Ft. Worth, Texas

St. Louis, Missouri



Patented Nov. 15, 1904.

Sample Doz...$1.50 Dozen
Lots of 100...11.00 Hundred
Lots of 500...10.00 Hundred
Lots of 1,000. 9.00 Hundred

Your Supply House carries them. If not order direct.

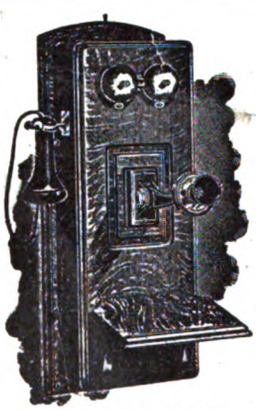
FRANKEL'S TESTING CLIPS

For testing Insulated or Bare Wire Lines.
Save 15 to 30 Minutes on every Test.
Unnecessary to "skin" the wire.
Obviate "breaks" and use of Tape.

Get them for your Inspectors, Linemen and Installers.

THEY SAVE MONEY

FRANKEL DISPLAY FIXTURE CO., 740-742 Broadway, N. Y.



Our Price is Right

1st TELEPHONE MADE

with all connecting wires, binding posts and terminal screws fully concealed

To Prevent Trouble

and with no exposed metal parts in the circuit to

Avoid Danger

from lightning while using the instrument. Send us your inquiry and we will "SHOW-U" at our expense an interesting proposition.

INTERNATIONAL TEL. MFG. CO.
Harrison and Clinton Sts., Chicago

IMPROVE YOUR PAY

stations' service by equipping them with POOLE Lock-Outs. When one station is in use your long distance service won't be spoiled by having someone "butt in" at another station on the same line.

Particulars for the asking. Write for Booklet AL-2.

MOUNTAIN STATE ELECTRICAL CO.,

WHEELING, WEST VA.

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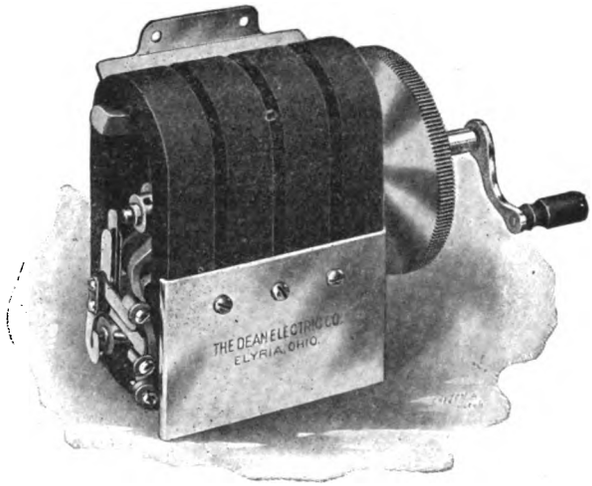
DEAN TELEPHONE APPARATUS

Our Four Bar Generator



This generator is built in a very substantial manner, giving it long life and qualities that in a great many respects make it equal to other five bar generators. It is built for service and will stand up indefinitely under abnormal conditions. These machines, like all of our generators, have laminated armatures, the windings being carefully made and highly insulated to prevent trouble, which often develops where alternating currents are used. By using substantial construction there is absolutely no chance for change of adjustment between the armature and pole pieces during shipment. Many other generators "test out" well before shipment, but upon being received by the purchaser, owing to poor mechanical construction, have shifted, changing the air gap and alignment and greatly reducing their efficiency as a ringing machine.

FACTORY AND GENERAL OFFICE, ELYRIA, OHIO

BRANCH OFFICE, Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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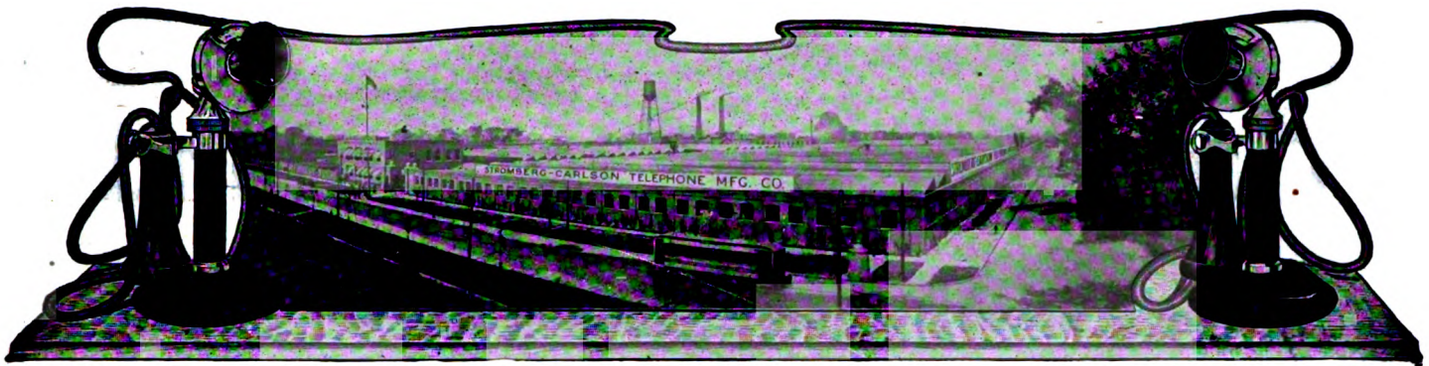


Quality Switchboard Cable

Is made of 98% Pure Copper tinned wires insulated with best grade Tussah Silk and Cotton, selected, cleaned, refined and dyed by the manufacturer.

The conductivity of the copper wire specified is always maintained—the tinning is smooth, regular, and an increase of .0001" in the diameter of the wire allowed.

Tussah Silk is not used containing more than 3% of extracted matter (oil or loading material) when treated with pure ether.

Cotton used is washed, steamed and boiled at proper temperatures. Analine dyes of the best grade are used in dyeing the cotton, making bright, fast, contrasting permanent colors for the coding of the conductors. The process is under the supervision of experts.

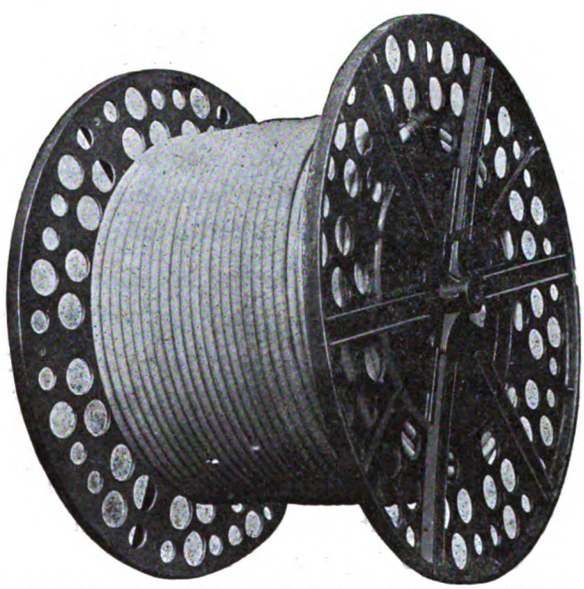
The standard insulation consists of *two* (2) *servings of Tussah Silk* and *one* (1) *serving of cotton,* or one (1) serving of Tussah Silk and two (2) servings of cotton, if preferred.

Standard Cables

5 Pairs.
11 Pairs.
16 Pairs.
21 Pairs.
26 Pairs.
34 Pairs.
41 Pairs.
51 Pairs.

Cables consisting of triple and quadruple conductors furnished when specified.

Flat and round shapes furnished.



100-PAIR SWITCHBOARD CABLE VENTILATING REEL.

Conductors

The "Stromberg-Carlson" Color Code scheme furnishes a different combination of colors for each pair, allowing any pair to be selected from any place in the cable length.

Standard cables are of No. 20 and No. 22 B & S tinned Copper Wire Conductors. No. 24 B & S and combinations of conductors made up subject to special prices.

The process of extracting any moisture and drying before and after painting with our "flame-proof" compound develops an additional external protection that moisture cannot penetrate, and gives us a cable of the highest *insulation resistance.* WE GUARANTEE 500 MEGOHMS PER MILE. This insulation resistance cannot be maintained in the ordinary "painted" switchboard cable *not* hermetically sealed.

We make waxed cables (wet) that maintain a minimum insulation resistance of 200 megohms per mile.

Order cables scientifically manufactured of the finest quality material—it gives the best service.

Write either office for latest prices and samples.

"Central Energy"

Stromberg-Carlson Telephone Mfg. Co.

Rochester, N.Y. · · · Chicago, Ill.

"Central Energy"

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Our Record is Behind Our Batteries

¶ You cannot do better than to profit by the experience of other telephone companies.

¶ Wherever the Gould Telephone Storage Batteries have been installed they have given unqualified satisfaction.

¶ No stronger proof of this can be offered than the flattering number of our REPEAT ORDERS. Ask any Telephone Engineer who has used Gould Batteries and be guided by what HE says.

¶ The construction of the Gould Plate absolutely prevents any loosening or falling out of the active material, thus prolonging the initial capacity far beyond the "life" of other types.

¶ Gould Storage Batteries have high watt efficiency at all practical rates of discharge, and in every detail of their construction and operation conform to the most rigid mechanical and electrical requirements.

¶ A double conducting lug is provided for the Gould Battery Plate, securing a more even distribution of current to all parts of the plate than a single lug. This is but a small detail, but it illustrates the skill with which the Gould Plate is designed and constructed.

¶ This care and skill has been exercised in the construction of every detail—both small and large—of the Gould Storage Batteries, and that is why they have demonstrated beyond all cavil their immense superiority over all other types of storage batteries for use in telephone exchanges.

¶ Saving in space, saving in care and inspection, saving in maintenance cost. These three savings are assured to users of Gould Storage Batteries. They are worthy of your careful consideration.

¶ "Gould Telephone Batteries" is the title of a booklet issued by the Gould Storage Battery Co. It contains many suggestions of practical value to the Telephone Engineer. We shall be glad to mail you a copy free upon request.

¶ ¶ It will pay you to investigate Gould Batteries. Without any cost to you, we will have one of our engineers survey your plant and submit a detailed report with estimate upon the cost and advantages of installing a Gould Battery to do your Work.

Gould Storage Battery Co.

SALES OFFICES:
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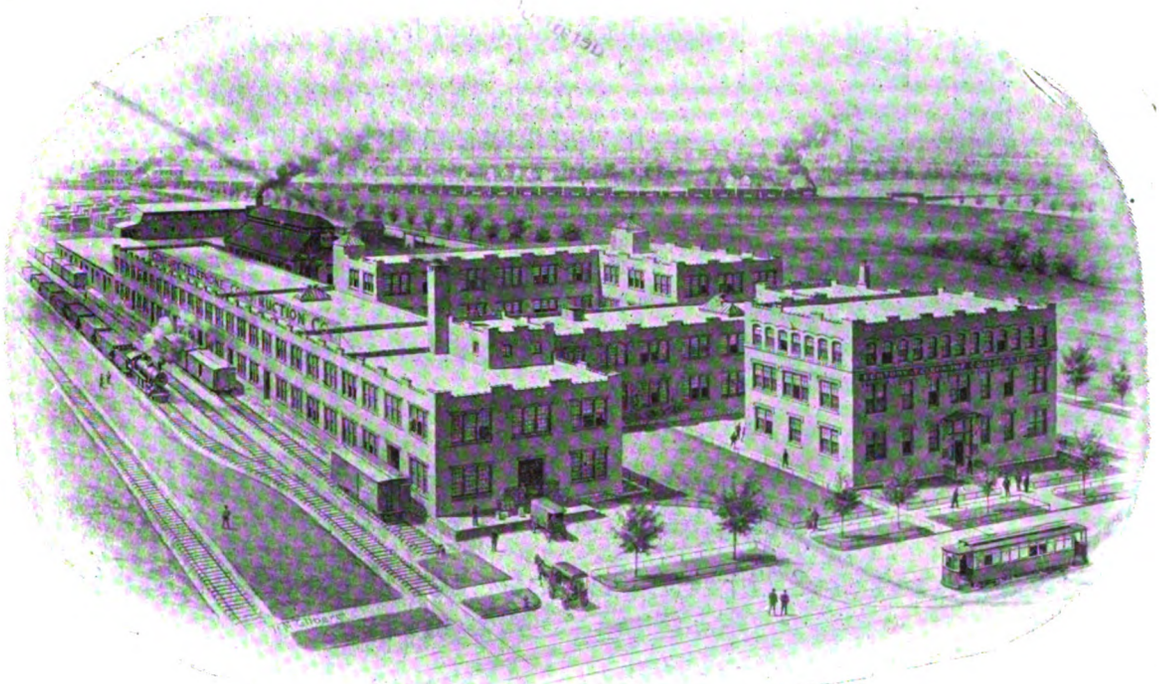
100% GOOD

Century Common Battery Apparatus is convenient, rapid. Talking, Signalling, Ringing, all satisfactory and reliable.

The Form and Finish of Subscribers' Apparatus and Exchange Apparatus alike is sightly, good design, durable.



CENTURY TELEPHONE CONSTRUCTION CO.
BUFFALO, N. Y., U. S. A.

Please mention THE AMERICAN TELEPHONE JOURNAL when writing to ADVERTISERS.

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All Kellogg Telephono Parts

Are Made From the Best Grades of Material and Are Carefully Assembled by Skilled Workmen, Thus Making Everything High-Grade Throughout

Kellogg Portable Desk Telephone,
For Central Battery or Magneto Use.

The tubular hard-rubber covered standard, with hollow brass shell, nickel plated base, is distinctively KELLOGG.

The transmitter hinges at top of standard, and there is mounted in base the hook switch and hard-rubber terminal block for receiver and desk stand cords.

The hook switch is of the toggle joint type, having a long motion of the springs, thus obtaining most excellent contacts with only a minimum motion of hook.

All necessary parts are properly insulated, are easy of access and everything is made as nearly dust proof as possible.

THIS IS WHY

The Standard of Excellence Is Always Maintained By Kellogg Apparatus

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KELLOGG SWITCHBOARD AND SUPPLY CO.

CHICAGO, ILLINOIS, U. S. A.

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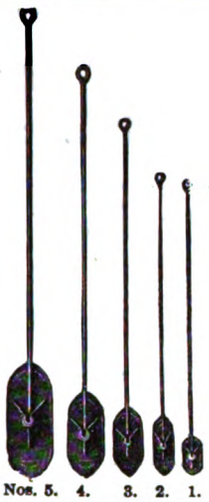

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(PATENTED)

The Iron Dead Man

Made in five sizes, from that for 20-foot pole to large one for extremely heavy strains, wrecking trains, etc.

They are the best anchor in every way for holding up heavy leads and round corners. Easy to set, pull against solid earth and will not creep.

As they are made of Malleable Iron, they are practically indestructible. All anchor plates guaranteed.

Send for descriptive circulars and prices.

Manufactured by

THE W. G. NAGEL ELECTRIC CO.

26-30 ST. CLAIR ST., TOLEDO, O.

Horizontal Telephone Cable Splices

HAVE MANY DISADVANTAGES.

First: You have two masses of solder on each end of the sleeve that have to be carefully wiped, which necessitate the employment of a high priced expert cable splicer. Second:—Your horizontal wiped joint may not be absolutely moisture proof. Third—When it is necessary to open a joint the solder has to be blown off of both ends and the sleeve moved back or cut. Fourth—It is difficult to get at the inside pairs. Fifth—The sleeve must be moved over the spliced pairs and both ends carefully soldered and wiped when a test or repair is finished. Sixth—It does not admit of changing of multiples without removing the sleeve and solder. Seventh—It takes at least two feet more room in a manhole in underground cable construction. Eighth—It costs more on first installation.

No. 1.

No. 2.

No. 3.

Compare the above with the ease and economy with which a joint can be made when you use

HARGIS CABLE SPLICING JOINTS

By referring to the six pictures and the following descriptive matter you will get a good idea of its advantages over the old style horizontal wiped joint. No. 1—Showing method of putting cable through lead gasket and brass collar before soldering. Note the cup thus formed. No. 2—The solder at a little above wiping heat is then poured into the cup and any roughness removed by a blow torch and wiping cloth. No. 3—The armor is then taken off the cable and the wires boiled out with paraffine. No. 4—The wires are then spliced as usual, only with greater ease. No. 5—Shows the appearance of the H. S. J. when the pairs are laced ready to be enclosed by the lead casing. No. 6—The joint is completed by screwing the sleeve tight with the spanner wrenches.

Made in three sizes. Costs less on first installation. Saves money while in use. Send in your order to-day.

No. 4.

No. 5.

No. 6.

W. N. MATTHEWS & BROTHER, Manufacturers of Patented Money-Saving Specialties

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THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE

United States Coin Register Co.

TOLEDO, OHIO

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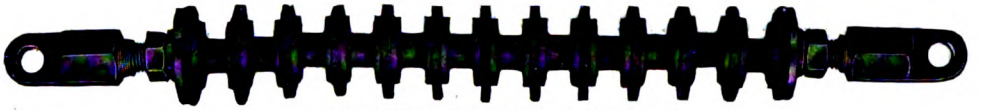
"Mul" Devices For Underground Cable Construction

LOWER THE INSTALLATION COST. MAKE PERFECT UNDERGROUND SYSTEMS



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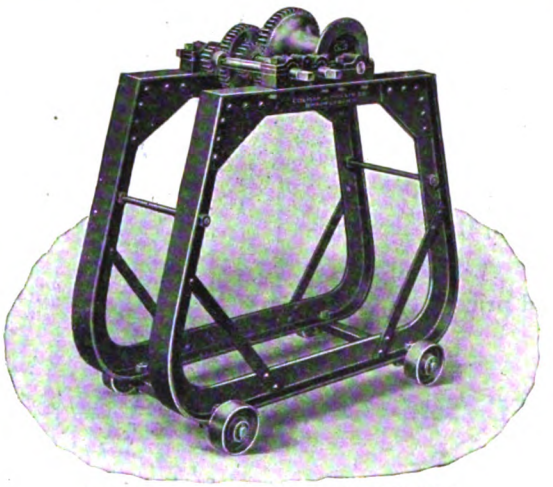
Sufficient Room Between Leather Washers to Prevent "Choking"—Made Flexible—Will Not Stick at Curves

"PERFECTION" FURNACE PROTECTOR



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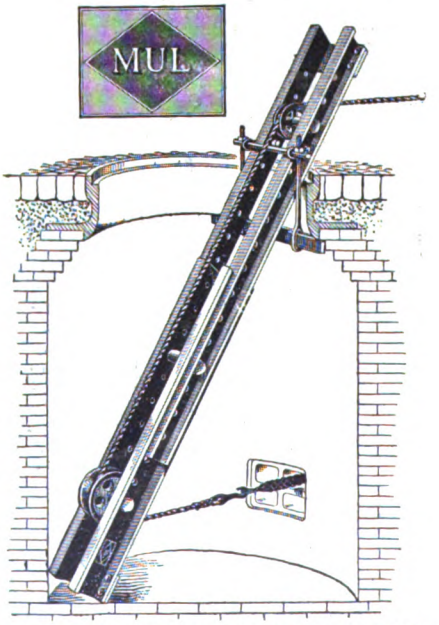
"PERFECTION" REEL JACK OR STAND
We Make Other Styles

GEM CABLE GRIPS

Save Their Cost In The First Pull

SPLIT GRIP OPEN

DOUBLE EYE



"RIGID" UPRIGHTS TO CARRY LEADING OUT SHEAVES—ADJUSTABLE TO ANY MANHOLE

SPLIT GRIP APPLIED

SINGLE EYE

Send for our Catalogue Now

Cable Splicer's Accessories

COLMAN J. MULLIN CO.

430 KENT AVENUE - - - BROOKLYN, N. Y.

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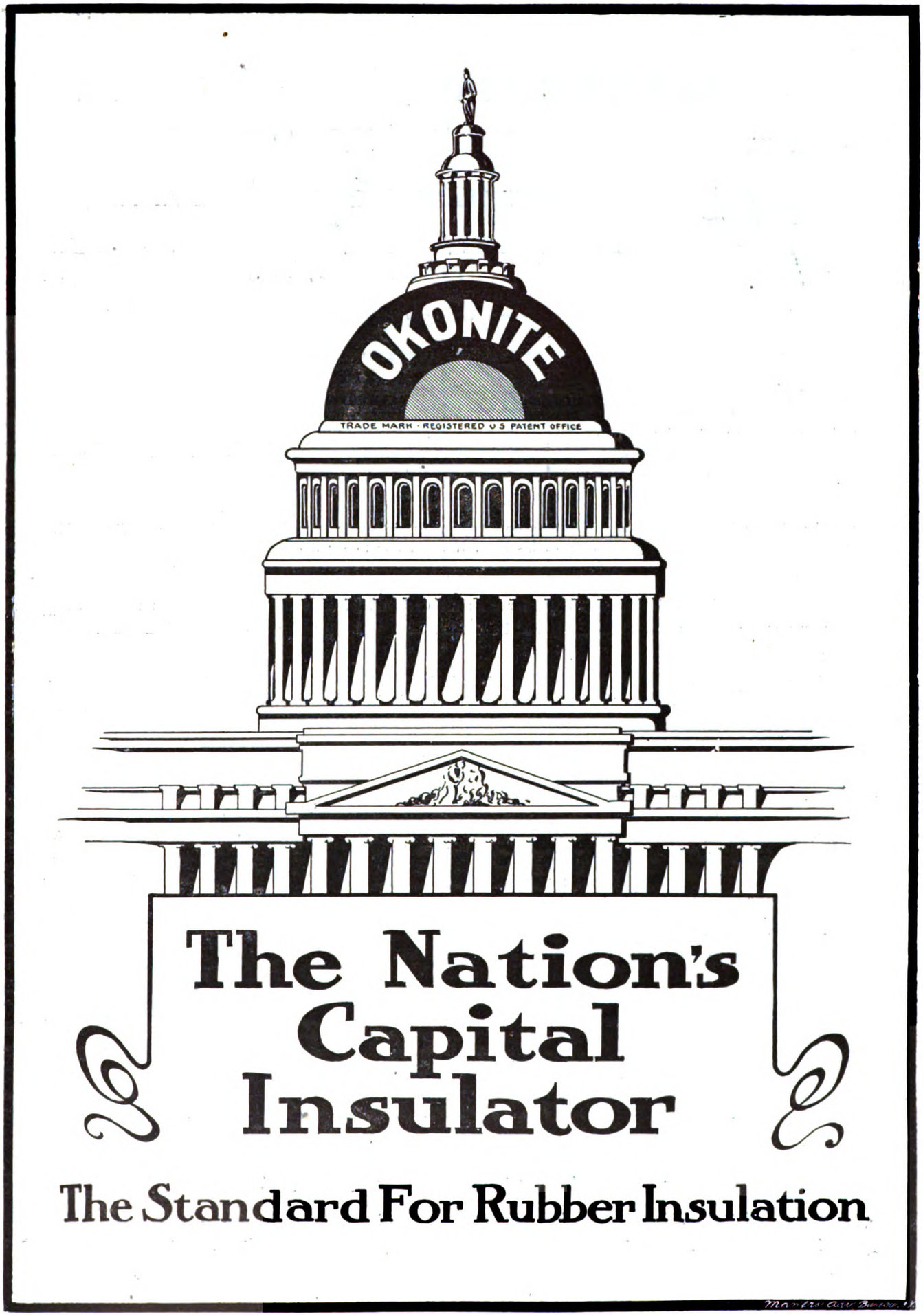

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TELEPHONE SUPPLIES

Immediate Shipment of Orders for Heavy Line Construction Material

HIGHEST GRADE QUICKEST DELIVERIES

DOUBLEDAY-HILL ELECTRIC CO.,

PITTSBURG, PA.

"It might interest you

to know that the total maintenance expense of parts for our entire plant of 3,000 switches for the past eighteen months has been $10.24," writes Supt. J. A. Duncan, of the Sioux City Telephone Company, Sioux City, Iowa. (This company operates our AUTOMATIC TELEPHONE SYSTEM.)

"A like sum

would perhaps take care of the repair cost on operators' chairs in a manual exchange of the same size," adds Mr. Duncan. (We'll be glad to send you a copy of his letter if you'd like to see it.)

It occurs to us

that the one item of switchboard cords alone for a manual exchange of 3,000 lines would amount to at least $150 in eighteen months. That is fifteen times the cost of all repair parts on the Sioux City automatic exchange.

That is only one

of the many economies of the AUTOMATIC SYSTEM. These economies all help to swell the profits. And—the AUTOMATIC, being the best service, commands the highest rates. Low production cost plus high selling price equals big dividends. That is what led to the adoption of the AUTOMATIC TELEPHONE SYSTEM in the following cities:

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Butte, Mont.
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Rushville, Ind.
San Diego, Cal.
San Francisco, Cal.
Santa Monica, Cal.
Saskatoon, Sask., Can.
Sioux City, Iowa.
South Bend, Ind.
Spokane, Wash.
Springfield, Mo.
St. Marys, Ohio.
Tacoma, Wash.
Toronto Junction, Can.
Traverse City, Mich.
Urbana, Illinois.
Van Wert, Ohio.
Walla Walla, Wash.
Wausau, Wis.
Westerly, R. I.
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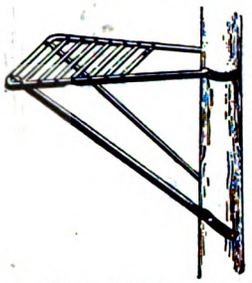

Can't say that of the other kinds, can you? Security Seats can be easily and quickly secured to the pole without the slightest injury to the pole. They never split, crack, or break under strain or weather as do the other kinds. And remember that they are cheaper than the rest.

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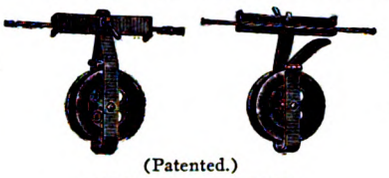

It doesn't seem possible, you'll say—but it IS possible.

It all depends upon the trolleys you use.

(Patented.)

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are made of the best iron. They will accommodate *any* size cable. They're very cheap and will last practically forever.

Our Security Book tells all about them. Get it.

THE F. BISSELL COMPANY, TOLEDO, O.
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Security Sundries For Cable Splicing

Shave Hook for scraping lead sleeves, *Boxwood Dresser* for shaping lead sleeves and *Boxwood Pin* for expanding lead sleeves. We carry them all in stock. If you'll write to-day for prices and further information we can ship immediately.

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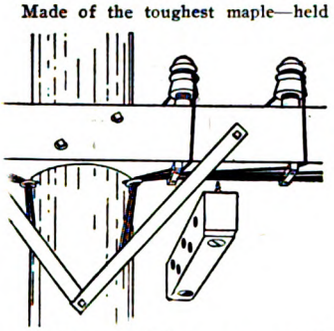

They're just the thing to insure neat looking, well wearing, pole work. Cost? 1,000 for only $5.00.

Our security book gives further facts and prices about this and all our other Security Specialties—you should have it in your files. Write for it to-day.

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The old style rods were all right if they didn't break so easily—if they weren't so hard to join and if they didn't jam at the wrong moment. Yes—and if they didn't cost so much.

And the more trouble you had with an old style rod the more will you appreciate the new, safe Security Conduit Rods. And please remember that Security Rods are extremely cheap. Our Security Book gives figures and facts—will you write for it?

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They should be called "Security *Safety*" guards—because they're the safest, strongest, sightliest guards built. Yes, and better than all this—they are collapsible—take little room when folded—but when fastened upright cannot be unjointed by accident.

They do not cost much either. You should let us tell you more about them.

We sell the manhole tops, too.

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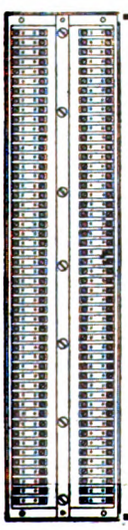

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Security Cable Distributing Panels!

They are splendidly made. Can be used for pole house work or for the telephone exchange.

No other panel quite so convenient, compact and economical.

We make them for any number of conductors. Please order by conductor.

Prices and particulars in our Security Book. Get it.

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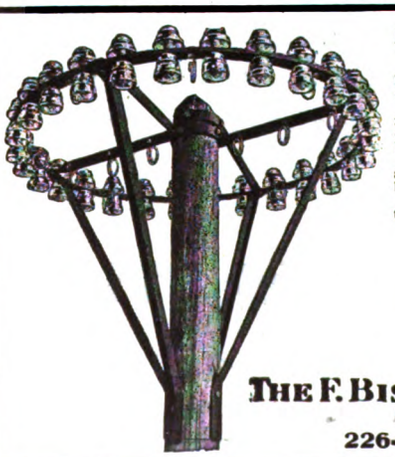

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have distinct and decided advantages over all others.

Why? Because they afford better connections; because they are stronger; because they mean better insulation and because they are very cheap.

We make many different sizes. They all fit the top of the pole or any point below it.

Why not get our Security Book?—it tells all about them.

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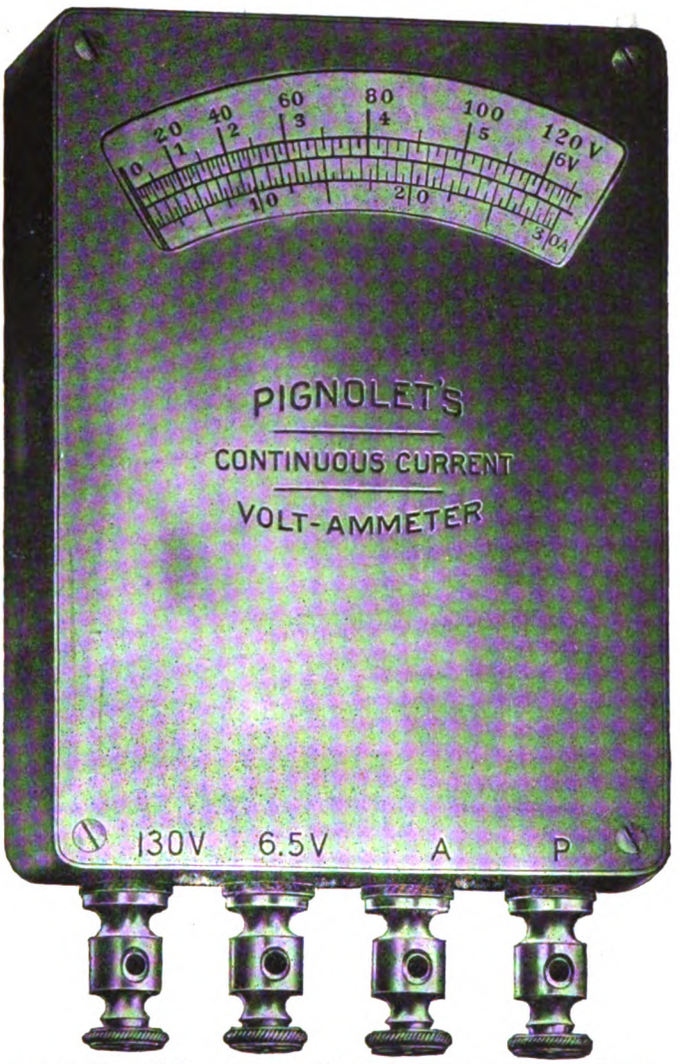

Actual Size of Instrument. Three in One—Ammeter, High and Low Reading Voltmeter.

Every Exchange Needs One

If you use one of our voltmeters once, you will acquire the voltmeter habit and never give it up.

Do You Know

that the instrument shown on the right gives both volt and ampere readings?

That you can use it for the measurement of resistances?

That it is low in price?

That it is accurate?

New Switchboard Instrument.

That our triple scale instruments will measure the voltage of a single cell or that of an electric light main?

That you can measure the resistance of your lines with it?

That you can measure the resistance of your ringers and induction coils with it?

That you can test insulation up to 100,000 ohms with it?

Yet the cost is low and if you write us we will make a price that you can afford to pay.

LOUIS M. PIGNOLET

80 Cortlandt Street, New York

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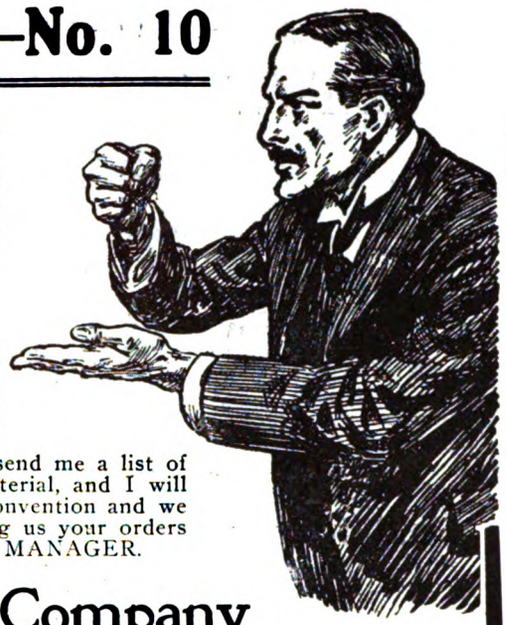
Talks With The Buyer—No. 10



Well, the Glorious Hurrah of the National Convention is over. I will have to wait a minute to catch my breath. There was the enthusiasm of numbers, the glowing reports of success in the field, the interesting exhibits, described in detail on other pages of this paper, that one round of pleasure at Sans Souci Park, plenty to eat and witty speeches at the banquet, and the side trips of which no mention will be made. But, then, you were there, of course. If you were not, you missed the time of your life.

DID YOU GET YOURS?

If you were at the Convention you must have been in our exhibit. If so, you "got yours." If you were not at the Convention write me and I will send it to you. Right over the mysterious box in our exhibit there was a sign which said: "We Are Not In The Advertising Business. We Advertise To Get Business," which is the moral of this story.

When you write and tell me you were not at the Convention, send me a list of your telephone requirements, either instruments or construction material, and I will quote you prices when sending you "yours." If you were at the Convention and we had an opportunity of talking over matters, I know you are sending us your orders already.

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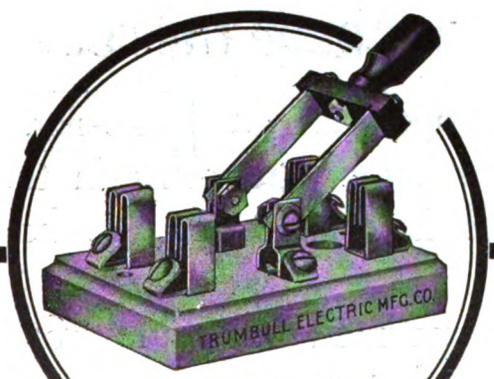

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CLIPS

ON ACCOUNT OF THEIR PECULIAR DESIGN, THE CLIPS SPRING TOWARD THE BLADE AND MAKE A PERFECT SELF-ADJUSTING CONTACT. LOTS OF OTHER POINTS TOLD IN BULLETIN.

RECESSES IN THE BASES HOLD CLIPS FIRMLY AND KEEP THE ALIGNMENT.

RECESSES

TRUMBULL TELEPHONE SWITCHES

THE TRUMBULL ELECTRIC MFG. CO.

NEW YORK
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65-67 Oliver St.

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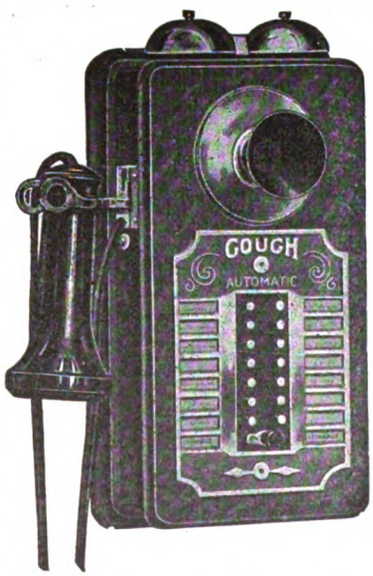
The **Couch Automatic Reset Intercommunicating Telephone** exemplifies the Acme of private branch exchange economy.



Economical to Installed.

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Connection between different stations and with the central exchange quickly secured without the necessity of a branch operator.

It is to your interest to write to-day for our booklets.

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NOT WHAT YOU ARE USING NOW
BUT WHAT YOU WILL USE EVENTUALLY

Because it is what your subscribers want

THE LIVERMORE
ONE-SLOT PAY STATION

Practical telephone men who have seen and tried it, cannot find a flaw.

Levers and superfluous slots eliminated.

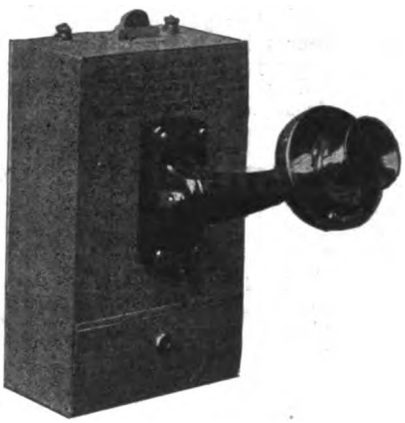
There are no air pumps.

No springs.

No knives.

No clock work.

No push buttons.



NOTHING FOR THE SUBSCRIBER TO DO BUT DROP THE COIN—

Any coin or coins mentioned by the operator—in one-slot. Whatever noise is occasioned by the dropping of the coins in the slot and their passage through the chutes is confined to the box at the sub-station.

The transmitter and the signals are mounted on a bell resonator insulated from the box and the coin chutes.

The desirable result of loud, clear signals to the operator minus all outside rattling and pounding is thus achieved.

You had better investigate the

LIVERMORE ONE-SLOT PAY STATION

now and get your order in early for prompt delivery.

LIVERMORE PAY STATION CO.

4 BOWKER STREET **BOSTON, MASS.**

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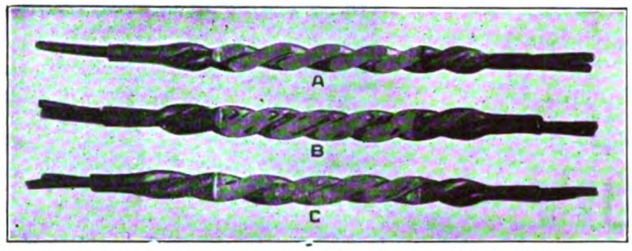
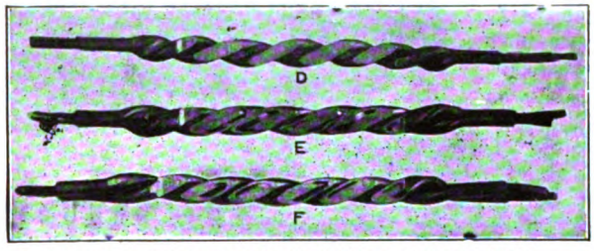
Here's the whole story

These cuts are from photographs that have NOT been retouched.

(Photographs show joints after twisting filed half through longitudinally.)



A—COOK NUMBER 10 JOINT WITH NO. 10 WIRE
B—COMPETITOR 1—NO. 10 JOINT WITH NO. 10 WIRE
C—COMPETITOR 2—NO. 10 JOINT WITH NO. 10 WIRE



D—COOK NUMBER 10 SLEEVE WITH 10 AND 12 WIRE
E—COMPETITOR 1—NO 10 SLEEVE WITH 10 AND 12 WIRE
F—COMPETITOR 2—NO 10 SLEEVE WITH 10 AND 12 WIRE

It's the flat side that does it.

There's no mistaking the moral to this story. The only way to secure such an absolute union between sleeve and wire is to use the

COOK SELF WELDING WIRE JOINT

No other joint draws up to the wire and stretches tight around it. Other joints when twisted leave air spaces that lead to corrosion and consequent deterioration.

For permanently perfect joints, specify Cook's.

Frank B. Cook. Inc.

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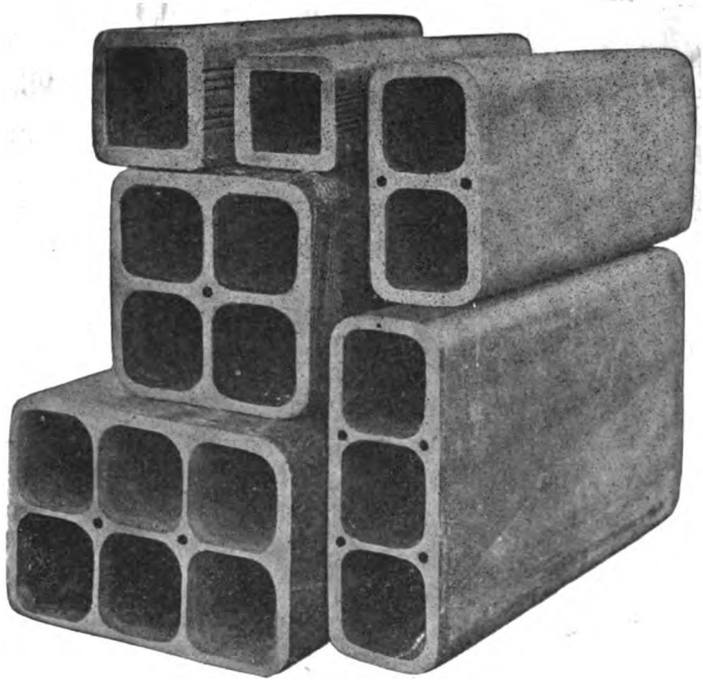
PRICES

ON

VITRIFIED CLAY CONDUIT



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Commercial Electrical Supply Co.

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THE CALCULAGRAPH

AUTOMATICALLY RECORDS ELAPSED TIME and IT MAKES NO CLERICAL ERRORS

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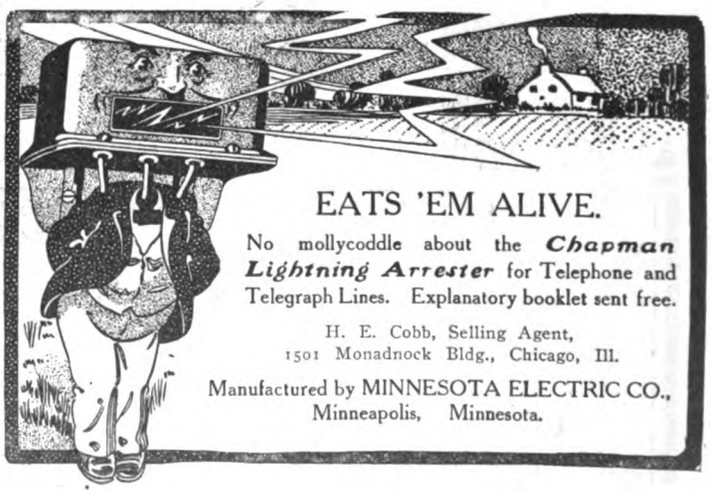
1437 JEWELERS' BUILDING, NEW YORK CITY
Agents for Canada: Northern Electric and Manufacturing Co., Ltd., Montreal.



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Manufactured by MINNESOTA ELECTRIC CO.,
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VOLUME XV. SATURDAY, JUNE 8, 1907. NUMBER 23.

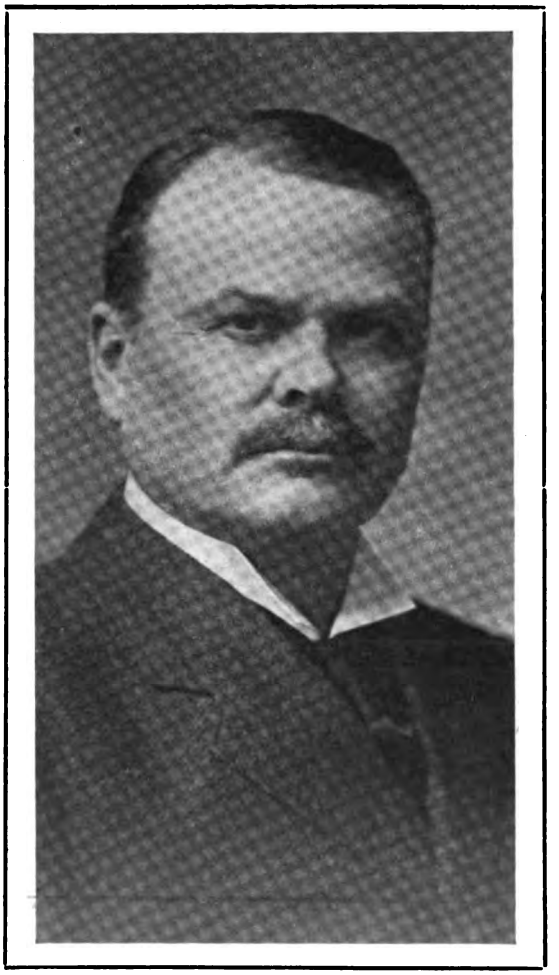
The 1907 Independent Telephone Convention

THE annual convention of the International Independent Telephone Association was held at the Auditorium, Chicago, June 3-6. All of Monday and Tuesday afternoon was given over to the meetings of standing committees. The convention proper began Tuesday afternoon. The assembled delegates were called to order by President James B. Hoge of Cleveland, Ohio. At that time the convention hall was filled with workers in the field of Independent telephony. It was a representative gathering, the attendance and interest manifested augurring well for the interest which is felt in the Independent movement everywhere.

Chicago's new mayor, Hon. F. A. Busse, was not present in person to welcome the telephone men, but he was ably represented by Dr. Evans, Commissioner of Health for the city.

Dr. Evans expressed the regret of the Mayor that he could not be present, and in his behalf and that of the city he extended a hearty welcome. After referring to the immense development of Independent telephony, he spoke of the appropriateness of such an organization meeting in the great city of Chicago, which had been foremost in industrial development.

Dr. Evans was followed by John M. Glenn, secretary of the Illinois Manufacturers' Association, which has been seeking to establish a local system and a terminal for Independent long distance lines in the city. He said that his association was in sympathy with the Independent movement and desired to get in touch with the Independent exchanges. The business of Chicago, amounting to $1,500,000,000, he said, is now dependent upon the Bell monopoly. Mr. Glenn then briefly outlined the history of the commercial association's struggle to get a franchise in Chicago. In behalf of the Manufacturers' Association he extended a hearty welcome.



Theodore Gary, President of the International Independent Telephone Association.

Mr. H. D. Critchfield, of Milwaukee, responded to the welcoming addresses. He stated that he was glad to know that Chicago had awakened to the magnitude of the Independent movement, and expressed sympathy with the Manufacturers' Association for its failure to secure a local franchise. The general proposition that a competing telephone system is a duplication and a burden he declared to be incorrect.

The greatest growth of the Independent systems has been in 1906. There are within 500 miles of Chicago 1,200,000 Independent telephones. There are in the same territory less than 650,000 Bell telephones. Chicago now, therefore, deprives the 1,200,000 Independent telephone users from doing business with the city. No man, he insisted, has to take two telephones. He only takes the second telephone when it is to his financial advantage to do so. The result of a second system in Chicago would be a doubling of the telephone users in the city, not a division of the present users.

At the close of Mr. Critchfield's remarks, which were received with great enthusiasm, the annual convention photograph was taken. In this connection there was a very pleasing diversion. At the explosion of the flashlight a series of American flags unrolled and fell into view, while the delegates showed their pleasure by applause.

James B. Hoge then read what he declared to be his last address as president of the telephone association.

Assistant Secretary J. A. Harney read his annual report after Mr. Hoge had finished.

During this session short talks on practical subjects brought out interesting remarks from a number of members. Mr. C. E. Tarte, of Michigan, felt that it would be better to buy copper even at the present prices rather than to longer delay needed construction. He urged upon all to go ahead in construction work to meet the ever-increasing demand for new telephones and long distance connections.

Mr. Sumner, of Oregon, said that construction work in Oregon and Washington was progressing rapidly.

Charles West of Pennsylvania aroused considerable indignation by a report that his state had enacted a statute prohibiting the use of the shield. Senator Kline, however, stated that the act was simply to avoid the desecration of the American flag and did not apply to the present use of the shield showing the American colors.

J. B. Rhodes, of Ohio, spoke on methods of collecting, emphasizing the necessity to first give good service and then keep constantly hammering.

The Wednesday Morning Session.

The attendance at the morning session of the convention on

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Wednesday, which was called to order at 10:30 o'clock by President James B. Hoge, was very flattering. Nearly every seat in the convention hall was filled and the business of the session proved unusually interesting to the delegates. Owing to the large amount of business and the spirited discussion brought about by certain resolutions and the one paper of the morning, the business extended into the afternoon meeting.

The session opened with a report of the entertainment committee. Frank W. Pardee, Chicago, chairman of the committee, reported that one thousand tickets were secured for the delegates to attend the various entertainments at Sans Souci Park, but owing to the disagreeable weather only a very few were present. He also announced the annual banquet, which was held in the banquet hall of the Auditorium Wednesday evening.

The one paper of the morning which was read was "Independent Improvements and Possibilities," by C. E. Tarte, of Grand Rapids, Michigan. Mr. Tarte's paper was well received and he was loudly applauded at the conclusion.

Mr. Tarte's paper was discussed by several of the delegates and this was a very interesting part of the morning session. C. W. Kline, of Hazelton, Pa., opened the discussion, and the substance of his remarks was that the Independent companies must get together and help one another. Several other delegates followed with interesting discussions on the subject, and these were listened to with intense interest.

The next order of business taken up was the report of the committee on resolutions. These were read and presented by C. W. Kline of Pennsylvania. They were unanimously adopted, especially the one extending a vote of thanks to James B. Hoge, who has served the International Independent Telephone Association as its president for the past three years. This was adopted by a rising vote. The resolutions were as follows:

WHEREAS, The Bell Telephone Company is insidiously proposing long distance connection to local Independent telephone companies in various parts of the United States and offering in consideration of entering into such connection to abandon the local field; and

WHEREAS, It is the sense of this convention that any such connection is bound to injure the Independent telephone cause as a whole; therefore, be it

Resolved, That this association frowns upon and denounces any affiliation or connection of Independent telephone companies with the Bell company anywhere on the American continent as being injurious to the people as a whole.

WHEREAS, There are difficulties and dissensions arising from an infringement by an Independent company on the territory already occupied and served by another Independent company; and

WHEREAS, Such infringement is injurious to the cause of Independent telephony; therefore, be it

Resolved, As the sense of this convention, that the company on the ground and satisfactorily serving the public shall be entitled to recognition by this association and any company or individual infringing on the rights of such Independent company shall be repudiated and shall not be admitted to membership in this association.

WHEREAS, Jas. B. Hoge has well and faithfully served the International Independent Telephone Association as president for the past three years, giving freely of his time and means to advance the interests and further the cause of Independent telephony, and

WHEREAS, We fully appreciate his invaluable services to the association; therefore, be it

Resolved, That this convention tenders to Jas. B. Hoge a unanimous vote of thanks for his able services in so successfully organizing and presiding over the destinies of the association for the past three years and that the secretary of the association is hereby instructed to have a copy of this resolution engrossed and presented to Mr. Hoge as a testimonial to the present as well as to all future generations of the high regard in which he is held by this association.

President Hoge responded feelingly and thanked the association for the honor extended, and praised the association for the work it has done during the past three years. He said that his sole object since he has been serving as president of the International Independent Telephone Association was to bring about a condition of affairs whereby the Independent companies would pull together in their work, and that he was gratified to see that this had been done. He also stated that the organization was not one person's organization, but the Independent Telephone organization, and urged that its power be used rightly, and not for politics. Mr. Hoge stated that he noticed the difference in the class of men attending the convention since its first meeting, that is, as to the difference in the ages of the men. On taking his seat he thanked the delegates as retiring president for their work in building up the organization.

The remarks of President Hoge were followed by the written reports of the state, territorial and provincial associations. These were brief, but interesting. Adjournment was then taken for the noon luncheon.

The Wednesday Afternoon Session.

AT two o'clock on Wednesday the afternoon session convened, taking up the roll call of states. Mr. Nelson, reporting for Kansas, stated that as a feature at the recent convention in his state fifty of his company's operators were invited and attended. It was made a practical convention, oratory was done away with, and the members attended to business in a way that will produce much good.

Secretary Deering, of the Iowa Association, said the telephone business has increased rapidly in Iowa. No less than 2,500 companies reported during the past year for taxation. A state agent had been appointed and his work is very helpful. A great many companies in his state are anxious to see a plan for an organized campaign of publicity introduced by the association.

Delegates to the 1907 Convention of the International Independent Telephone Association Assembled in the Auditorium, Chicago.

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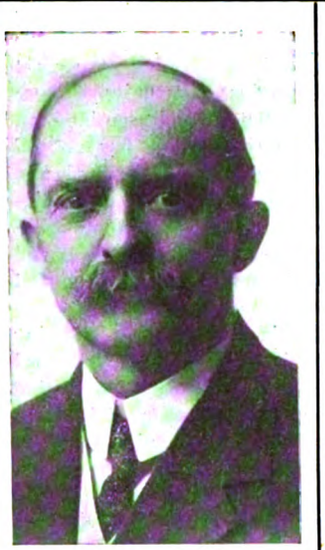
Charles E. Sumner, Oregon, Elected 2d Vice-President.

Frank L. Beam, Ohio, Elected 1st Vice-President.



Manford Savage, Illinois, Elected Treasurer.

W. B. Woodbury, Gen'l Manager Detroit Home Telephone Company.

For Kentucky Mr. Overly reported. The Kentucky Association has twenty-seven members. Although only organized last year, it is gradually growing and prospering. There are now 50,000 Independent telephones in the state.

E. B. Fisher, president of the Michigan Association, made a very interesting report, stating that last March a definite organization was perfected. In the Southern Peninsula the Independents now have 428 exchanges, 1,089 toll points. In the entire state there are 70,000 telephones in operation. He urged other states to join in a movement for developing interstate service. His state hopes to have connection with Chicago soon.

Charles S. Norton, of Indiana, reported for his state as follows: The Independent telephone movement in Indiana is now more firmly entrenched than at any previous time; the Independents were never more independent. The state has been deluged by tracts and newspaper articles arguing, pleading with subscribers and the public for a single telephone system. Notwithstanding this the Independents have remained loyal. In the meantime several sub-licensee companies have severed their connection with the Bell lines, and now connect with the Independents exclusively. There is now but little territory in Indiana unoccupied by Independents. In forty out of ninety-two counties of the State there is little or no opposition. During the past year the companies have devoted their energies chiefly to improving and extending exchanges and toll lines. There has been an increase of 10,421 subscribers and 1,200 circuit miles of toll lines, requiring an additional investment of $1,139,996. It is now possible for any Independent company to have commercial toll service with every other Independent company in the state. Earnings show a remarkable increase. While the added investment is only 8 per cent, the gross earnings amount to $3,270,114. This increase of 16½ per cent, or $467,550, indicates much better management, and shows how the companies are fast perfecting their knowledge of methods of handling their business. Out of 385 Independent companies in the state, the only one which has gone into liquidation during the past year is a sub-licensee. The Indiana Association is now in fine form. Not a member has withdrawn during the year and there has been an increase of twenty-seven members. The total membership is 145 companies, representing nine-tenths of the entire Independent telephone investment in the state. For revenue the association is dependent entirely upon assessments from member companies. All obligations are promptly met and the year closed with a good balance in the treasury.

The report for Arkansas, made by Mr. Askin, showed good progress for the year, and largely increased membership. A law granting the right to condemn railway rights of way has been found very useful.

Houck McHenry, of Jefferson City, Mo., was next with an interesting report, dealing with a variety of features connected with his state.

For Nebraska, R. E. Mattison reported, stating that Nebraska has 90,000 telephones and 3,000 miles of toll lines. The most successful enterprise of the year was the publication of a state directory, which brought many subscribers.

Mr. F. L. Beam, for Ohio, reported eighty-eight counties developed, and every county well equipped with Independent telephones, with the sole exception of Hamilton. The growth for the year shows 4,296 instruments.

J. S. Brailey, Jr., of Toledo, Ohio, spoke on the subject, "The Strength of the Chain," and made a profound impression on his hearers.

For Oregon, Mr. Têtu gave a very interesting report. He said his company is ready to give Independent service in Portland and adjoining cities. Service has already been extended to Tacoma, Seattle and Walla Walla in Washington.

Charles West, of Pennsylvania, next reported, saying that there are 160,000 Independent telephones in the state, with 4,153 toll stations and 328,000 miles of toll circuits. President Folsom, of the Keystone Company of Philadelphia, read a paper stating that his company showed substantial growth. During the past year the switchboard capacity in the city has been increased 4,200 lines. At Camden, N. J., a new building is under construction and fifteen miles of new subway has been commenced. In one nearby small town a central energy plant is under construction.

S. C. Thayer, of Beaver Falls, Pennsylvania, spoke briefly, stating that the telephone business is prosperous in his territory.

For Virginia, B. L. Fisher reported progress. He said that his state has one hundred Independent companies.

J. Walter Barnes, of West Virginia, gave an interesting report of development in the Mountain State.

G. W. Buzzell, representing Vermont and New Hampshire, unable to be present on account of illness, sent a cheering message. Both Vermont and New Hampshire recently granted Independent franchises in several large towns. All that is lacked by Vermont and New Hampshire is trunk line connections to Boston and New York, to enable them to successfully cope with their competitor in long distance work. Locally they are more than able to hold their own now. During this season they will finish a trunk line from St. Johnsbury, Vt., to Laconia, N. H. At the last session of the Vermont legislature a law was passed giving all telephone companies equal rights in placing telephones in railroad stations.

F. E. Ebersole, of Portland, Me., reported prospects brighter to-day than a year ago. A permanent state organization was formed at Lewiston last March, with representation from eight thousand telephones and fourteen companies. All companies represented, with the exception of the Northeastern, were

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originally organized as farmers' or mutual companies. These companies have extended their lines until they cover a large territory and are joined together by toll lines. Along the coast line Maine has seven or eight Independent companies. There is also a large company operating fifteen to eighteen hundred telephones in the northern end of the state which has no toll service. Besides these, there are a few scattered companies in various parts, operating under adverse conditions, but still maintaining their independence. At the present time there are probably 18,000 Independent telephones in operation in the state and about 6,500 telephones now controlled by sub-licensees of the Bell company.

A report of the situation in California disclosed the following facts: The emancipation of the Pacific Coast from Bell control dates back four years, when F. F. Graves commenced operating the Los Angeles plant. Development and progress of business has been a triumphant march over southern California. In a territory one hundred miles square there are operating at present forty-two exchanges in thirty-nine towns, with a total of 54,000 telephones. The Bell company has in the same district 43,700 telephones.

In 80 per cent of the Independent exchanges the average rate is considerably higher than that of the Bell company. Los Angeles, having 60,000 telephones in service, counting both companies, gives one telephone to each four persons, while Pomona, with a population of 7,500, has over 2,000 Independent telephones and 150 Bell. In the following towns the proportion of Independent to Bell telephones is high: Whittier, 850 Home, 15 Bell; Downey, 175 to 4; Compton, 400 to 2; San Fernando, 125 to 1; Covino, 700 to 3; Monrovia, 655 to 40. Plants at Oakland and Berkeley have been completed. San Francisco has granted a franchise to the Independents and construction is proceeding rapidly. Independent long distance connections are complete.

J. S. Haley, of Livingston, Mont., reported for his state.

A motion was made and carried to accept all reports and place them on file. At the conclusion of the roll call C. W. Kline, chairman of the committee on resolutions, presented a resolution which was adopted as follows:

WHEREAS, Independent telephone journals of this country have rendered the cause of Independent telephony invaluable service by constantly placing before the public the whole truth in regard to the movement, and

WHEREAS, We fully appreciate the great work they have constantly engaged in; therefore, be it

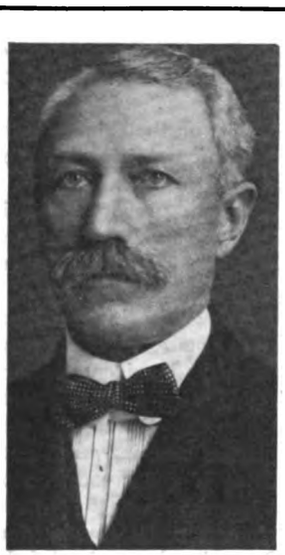
Resolved, That this convention extends to them its hearty thanks for their past efforts, and to encourage further efforts recommends that the rank and file in the Independent field support them loyally by patronage and subscription. Presented by D. A. Walker, Ohio, seconded by Edward E. Clement, Washington, D. C.

Before adjournment William A. Wynne, of Raleigh, N. C., and E. B. Fisher, of Michigan, made a few remarks. J. P. Boylan, of Detroit, Mich., presented the report of the Standard Operating Rules and Regulations Committee.

Climax of Good Feeling at the Banquet.

As a grand climax to a great day in the history of the Independent Telephone Association, the banquet, which is always the most notable annual feature of the convention, was held Wednesday night in the banquet hall of the Auditorium Hotel. Fully three hundred loyal Independents gathered under the incandescent studded dome of the hall and enjoyed a bountiful repast. The entertainment committee, Frank W. Pardee, chairman, certainly did the right thing in their admirable selection of delicious eatables. While dinner was being served music was furnished by the famous Chicago Thomas' Orchestra, and the songs by the Weber male quartette were probably the hit of the evening. Several songs, new and old, were rendered after each toast. C. W. Kline,, of Pennsylvania, filled the toastmaster's chair most gracefully. After congratulating the International Association on both the number and high character of the attending delegates, he introduced the first speaker of the evening, the silver tongued orator from Nashville, Mr. Luke Lee. Mr. Lee eloquently responded to the toast "The New South." Said he: "Tennessee stands stretching out her arms to the Independents. The Independent movement is new in our section. Few cities have competitive exchanges, Memphis and Knoxville being exceptions. The losing of the fight for a franchise in Nashville by E. L. Barber and his associates was necessary to the winning of the greatest victory, which came with the passage of a state law making it possible for a company incorporated in Tennessee, to construct plants in every city and town without securing a municipal franchise. Mr. Lee told how such a law had been passed by the people of the state working through specially elected state senators and representatives. After the campaign, bribery, graft and treachery in which the people's will was ignored time after time were exposed. The telephone situation in Tennessee is no longer a municipal affair, but one concerning the state. There is a flourishing Independent exchange in Memphis, the Bell being practically defeated there, but at present only the Bell exchange in Nashville." Mr. Lee concluded by a stirring appeal to Independent operators not to be misled into thinking the object of their being is to duplicate Bell mismanagement or high rates. Independent telephony must be grounded on a real demand for more telephones. This is

(*Continued on page* 381.)



A. C. Lindemuth, President of the Indiana Association.

James B. Hoge, Retiring President of the International Association.

Theodore Thorward, South Bend, a Leader in Independent Toll Line Development.

E. L. Barber, Ohio, Builder of Many Important Exchanges and Toll Lines.

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Address of President Jas. B. Hoge*

THE best information that I can obtain shows that there has been an increase in our system of more than 500,000 telephones during the past year. Franchises have been granted by overwhelming votes in the following large cities: Boston, Mass.; San Francisco, Cal.; Milwaukee, Wis.; Denver, Colo.; Omaha, Neb.; Springfield, Mass.; Nashville, Tenn.; and a number of smaller cities, thus leaving but a few centers of population where the Independents do not have adequate terminals arranged for.

In a number of states the interests represented by us have had, during the past year, all sorts of propositions made them to sell out, to consolidate, to become sub-licensees and even to purchase Bell exchanges; but with very few exceptions, and those few of minor importance, they have stood firmly by the principles of the association, refusing all overtures intended to weaken our cause; and, furthermore, a number who heretofore were sub-licensees of our competitor throughout the country have rejoined the Independent ranks, so that to-day we are much stronger than even one year ago.

Year of Prosperity, with Dividends.

The year has been one of increased prosperity among the Independent companies. Most of the companies have placed their properties on a dividend-paying basis, having decided to stop putting all their earnings into extensions and betterments as was the custom during the early days of Independent developments. Most of them, however, are content to pay reasonable dividends and then put a substantial surplus back into the properties for extensions and betterments. In almost all cases investigated I find this amount to be equivalent to from 3 per cent. to 10 per cent. on the capital stock of the company. Co-operative companies in many cases have been incorporated and placed upon a business basis, and are now employing proper help and paying dividends. Our business and securities have become better understood during the year.

Facts for Newspapers.

The association has furnished a large amount of information, which was gathered by constantly urging the importance of sending it in, to many of the Eastern papers as well as the papers throughout the other sections of the country, and to-day a substantial percentage of the United States understands and believes that Independent telephony is here to stay, that there is a place for two telephone systems, and that two telephone companies can get along in the same community as well as two telegraph companies.

Competition and Duplication.

Twelve cities with competition, representing a population of over 2,000,000, show a development of one telephone for 7.4 population, while the same number of cities without competition, with a population of 650,000, show one telephone to 23.8 population, with very much higher rates and unsatisfactory service.

A careful analysis of duplication of telephones in the following cities shows an average of only 12 per cent.: Columbus, Cleveland, Dayton, Indianapolis, Kansas City, Louisville, Minneapolis, Toledo.

Mr. Nichols, in his New York report, claims an average of about 15 per cent. in thirty-six cities. Every one will agree, I think, that if the two systems were owned and operated by the same company it would not be possible to save more than one-half of this duplication, for the reason that a majority of the business houses and offices do not have any more telephones to-day than are necessary to adequately take care of the business, so that in reality there is possibly a duplication that could be avoided of approximately 7 per cent. In other words, the general public is given more than 300 per cent. greater use of the telephone where there is competition than where competition does not exist, at lower rates, and far superior service, with a possible waste from duplication of only 7 per cent.

Independent Securities Withstand Attack.

Securities of many public-serving corporations of the United States have declined during the past ninety days from 10 to 30 points, but Independent telephone securities seem to have withstood the attack during this period with slight loss.

Compulsory Interconnection.

Without organization the legislatures in many of the states would be inclined to pass measures unreasonable and unjust to our interests, not to impose a burden on us, but through lack of information on the part of those introducing them. For instance, compulsory interconnection bills have been introduced into a number of the legislatures during the past year and the subject is being agitated by the press of almost every state where the Independents have a strong foothold. In most of the central, western, northwestern and southwestern states bills have been introduced during the legislative sessions just closed,

* Abstracted.

Ralph Reamer, Treasurer of the Ohio Association.

C. C. Deering, Secretary of the Iowa Association.

F. H. Woods, President of the Nebraska Association.

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providing for compulsory connection. In states whose legislatures will not meet until next winter similar bills will be introduced. The officers of the various state associations should at once inaugurate a campaign of publicity, pointing out the injustice of compulsory connection, which is an interference with private property rights, and would have a tendency to stop all further development of long distance lines. Stockholders of local companies should be informed by the managers of their respective systems of the operating disadvantages incident to compulsory connection, so that they can present the Independent side of the controversy intelligently to their representatives in the state legislatures. In all matters pertaining to legislative affairs telephone operators should secure the co-operation of their stockholders, because from a political point of view they have more influence than the man actively engaged in the management of the business.

Publicity Department.

The Executive Committee at its last meeting voted to establish a publicity department, which, in the judgment of the members of this committee, is of vital importance, in order that authentic information may be prepared to keep the press of the country properly informed with a view of strengthening our securities and educating the public to our business; the press department not to be used for the purpose of fighting our competitor, except in cases where our cause is misrepresented or unduly attacked by them; its principal purpose should, however, be constructive and in no sense destructive.

The necessity for this organization is well illustrated in the work being done by the local Chambers of Commerce in the various cities, which are supplemented by the State Board of Trade, and these by the National Board of Trade.

Measured Service.

Telephone service which up to the present time has been given almost exclusively on a flat rate basis by the Independent companies is subject to the same abuses and waste as the unchecked supply of electric current, gas and water; and there is unquestionably a growing demand on the part of the consumers as well as the management of the companies to have the service placed on a meter basis that will equalize charges between the various consumers, and eliminate many of the annoyances to which the business is now subject.

Long Distance Lines.

The year's record on long distance work shows up very favorably as compared with that of previous years. The high price of copper during the past six months has been responsible for closing down considerable construction work that would otherwise have been done. The various long distance companies are gradually increasing their earnings by leasing their circuits to brokers, manufacturers, newspapers and others for telegraph purposes.

In this connection, I would call your attention to the fact that statistics show that over 85 per cent. of the long distance messages are for points within a radius of 50 miles of the originating station, and might further state that the great majority of local companies are provided with adequate facilities for furnishing such connections.

Traveling Secretary Needed.

It has been frequently suggested that the association should have a traveling secretary who would give at least a portion, if not all of his time to visiting the different state associations for the purpose of working out more uniform methods in the various states, helping to strengthen the state organizations and attending their annual conventions. During the early part of this year we had Mr. Stadelman, of Iowa, visit a number of the state conventions, and the reports we received in Cleveland of his work indicated to us that such a plan could be made very effective. It has also been suggested that the various state associations should arrange a schedule for dates for holding their annual conventions, to be arranged one or two weeks apart and with some regular order, so that the traveling officer as well as any others who might be able to attend one or more of the conventions would be able to do so and minimize traveling expenses.

Contributions for Association Work.

Our present constitution provides for assessments to be levied against the various state organizations on a basis of not to exceed 1c. per unit per year. A number of the manufacturers have expressed a desire to place stamps, to be furnished by the association, on a basis of 1c. per unit on each telephone and each switchboard drop, while certain manufacturers of telephone supplies have announced their willingness to contribute one-twentieth of 1 per cent. of their gross receipts from the Independent telephone interests. This plan has been discussed with a number of the leading operators and they feel that it is one that will probably equalize contributions from the supply houses and manufacturers better than any other.

REPORT OF AUDITING COMMITTEE.

The Auditing Committee, through its chairman, Charles West, of Pennsylvania, reported that the total receipts from June 26, 1906, up to and including May 25, 1907, amounted to $17,444.11; that there was a cash balance on hand June 16 of $1,113.73, making a total of $18,557.84.

J. B. Ware, Michigan.

T. S. Lane, Montana.

E. R. Conklin, Illinois.

Richard Valentine, Wisconsin.

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W. R. Campbell, Prominent in New York Independent Telephone Affairs.

George T. Hewes, Manager of the Successful Iowa Clearing House.

P. C. Holdoegel, President of the Iowa Independent Telephone Association.

The committee found the total disbursements amount to $18,241.60, leaving a balance in the treasury amounting to $316.24.

The total assets of the association amount to $4,254.39 and the total liabilities to $5,845.51, leaving a deficit of $1,691.12, has since been provided for through the successful efforts of the finance committee.

The Report of the Assistant Secretary*

OUR card record of Independent companies has been increased by 2,642 names, so that it contains at present the names of 10,042 companies, all of which are strictly Independent, according to the best information obtainable. We have recently secured a list of over 10,000 cities and towns having Independent service, with the name of the company at each place, also considerable information regarding the organization of new Independent companies.

Supply Department.

During the past year this department again demonstrated its value in carrying out the purpose for which it was organized, namely, standardizing and extending the use of the official shield. Up to date the association has furnished shield supplies to Independent companies in forty-four States. The supply department was never intended primarily as a money maker, and has not been operated as such.

As a matter of general information, I am instructed to announce that it has never been the intention of the association in establishing the supply department to make it a general purchasing agency for the Independent interests. Shield supplies only have been handled, and on a number of occasions, both before and since the last convention, we have refused the agency of various accessories which were offered us.

Map Department.

Information has been received from and spotted on tracings for forty-two States, and we can furnish printed maps or blue prints showing from forty to ninety per cent of the existing Independent toll line development for fifteen States, and a special blue print showing important long distance connections in the territory from central Nebraska to the Atlantic seaboard.

The data on file include maps furnished by 1,252 individual companies and twenty-eight maps covering a State or group of counties received from State or traffic associations, the whole embracing lines of about 1,350 toll line companies.

General Statistics.

Besides working on our maps we have been constantly adding to our other data and now have a comprehensive list of rate sheets showing the situation before and after the introduction of competition in representative towns, including all of the larger places, also letters from city and state officials, business firms and representative men at various places, endorsing competition, and a great deal of other information of a statistical nature for various states and the country as a whole.

This information, particularly the rate sheets and letters, has been in great demand by the Independent interests who were seeking new franchises in various parts of the country, including such important places as Providence, Boston, Milwaukee, Hartford, Omaha, Denver, Nashville and other Southern cities; and we have been informed by many receiving this information that it has been of invaluable assistance to them in preparing booklets, newspaper advertisements, briefs, etc., in order to properly present their case. It is remarkable how little is really known regarding the Independent movement by otherwise well informed people.

At Hartford, Conn., the figures presented by the Independents were questioned in open court by their competitor, but the association had no difficulty in securing ample proof in the shape of affidavits, copies of old bills and vouchers, etc.

A nominal charge necessary to cover the cost is made for all work of this nature and for furnishing data previously referred to, and in no instance is assistance of this kind given to any but bona fide Independent people. If unknown to the association officers, those seeking such help must first present satisfactory evidence that they are entitled to the assistance requested.

In securing the information of various classes as above outlined, it has been necessary, of course, to call upon Independent companies in various parts of the country, and with scarcely an exception this information has been furnished with commendable promptness. The association thanks all who have rendered assistance in this matter.

Publicity.

During the past year the monthly bulletins inaugurated after

(*Continued on page 385.*)

*Abstracted.

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From the Editor's Viewpoint

ADVANCES IN SMALL SWITCHBOARD BUILDING.

WHILE so much attention is being given to standardization, those connected with small telephone companies who are interested in the subject must derive considerable satisfaction from noting the progress which has been made of late years in the design and construction of small switchboards. It is doubtful if in any other class of telephone apparatus the advantages of competition among manufacturers have been more clearly manifested. Formerly, as is well known, provision was made in a certain way to meet the peculiar requirements of service at these boards, which at frequent intervals were likely to be handled by inexperienced operators, and in which troubles could only occasionally receive the attention of a skilled repair man. The precautions referred to consisted in making the parts of extra strength, and this in turn was accomplished by making the apparatus in such proportions as to secure what would now be considered extremely great size and weight.

It took some time to demonstrate that this was not exactly what was needed. If both jacks and plugs were, for example, made heavy in the same proportion, the plug was likely to be pushed into place with a correspondingly powerful effort on the part of the operator, and there was no reduction in the relative amount of wear. If, as was often the case, a plug of about the size of a railway coupling pin was connected to a light and flimsy cord, upon which was hung a heavy and cumbersome weight, the opportunities for trouble might, in the light of present knowledge, be as readily imagined as described.

At present the size of boards has been greatly reduced as compared with early models, with corresponding advantages, not only from the maintenance viewpoint, but also by permitting a reduction in the amount of space occupied by equipment, reducing the necessary reach for operators, and, finally, adding to the neatness of the appearance of the entire board.

Improvements seem to have been consistently applied, not merely to the parts of the board most essential to its operation, but to all portions liable to deterioration, so that a uniformly higher grade of product is obtained. For example, methods of making supporting devices for the apparatus, plug seats, fasteners and other minor fixtures have been improved repeatedly, so that not only has their cost been reduced by the invention of more economical shop processes, but those in use to-day are far better adapted to serve their several purposes than the corresponding fixtures which are found on the older boards.

As a piece of cabinet work, no less than as an electrical or mechanical device, the modern small switchboard has been made the object of careful study, and the result is evident in the more symmetrical design, neater paneling, and in firmer joining of wooden parts. Any ordinary accident in shipment, for example, is extremely unlikely to inflict a more serious injury than a slight marring of surfaces.

It has been recognized that the maintenance costs, slight as they may be on apparatus of this type, depend to a considerable extent, not only on the design and construction of the manufactured parts, but on their arrangement as well. The modern idea is to have all wiring so placed that the terminals of different circuits may always be found instantly by reference to a standard blue print. When this has been accomplished the result is to make the installation and testing very easy. The boards may be kept in good condition by a man who has hardly committed a circuit to memory. When this state of affairs is compared with that recalled by some of the "old timers," who felt called upon to memorize not only the circuits but the location of hundreds of individual wires, if they handled any considerable number of such boards, the real value of the improvements in design becomes evident.

The modern small switchboard appears so simple, and is arranged in such an orderly fashion, that the casual observer hardly appreciates that it is made up of a considerable number of parts, and that each one of these and the assembly has been for years the object of study and experiment by skilled engineers and mechanics. Nevertheless, this simplicity has been reached only after persevering and well directed efforts, and the operating man who reaps the benefit in increased freedom from the cares which beset him in earlier years does well to occasionally think of what he owes to the efforts of the manufacturing engineers.

THE RIGHT SORT OF PUBLICITY.

ATTENTION was called by President Hoge in his address at the convention to a very important feature connected with the publishing of news relating to telephone companies. His statement was to the effect that frequently newspapers which have investigated items relating to the telephone industry which have been furnished them, and which they have published with perfectly honest intentions, have afterward found that they had been used as tools for the spreading of misinformation. The only course of action open to them was to publish the other side of the case "to square themselves with their readers," and thus put themselves in a rather unfortunate position. Naturally they hesitate from that time on to publish anything further for the same interests which furnished the incorrect news. Mr. Hoge wisely warned the Independents against the slightest over-statement of their case before the public, as their competitor is likely to be watching for such an opening. Should incorrect news be published, and then have its falsity exposed, the recoil in public opinion usually sets the company to whom it relates farther back than the position from which it started.

Coupled with the policy of carefully supervising whatever information is given out to the press should, however, be an alert and aggressive watchfulness to see that people do not miss any of the good things that the telephone company is doing. The public is usually very well able to find out faults in the company's service, and to a lesser degree in its plant and financial arrangements, but the good points need to be called to their attention, and no opportunity for doing so should be lost.

Particular attention should be given to informing the public of all improvements to the system, of the extensions of service or means of providing a more uniformly efficient service. The public should be convinced that dividends are not the sole reason for the operation of the company. Every improvement that can be of any benefit to subscribers should be called to their attention and the idea instilled in their minds that the company's management is always on the watch for any feature that will tend to increase the value of the service.

HOW TO PARALYZE A TELEPHONE LINE.

WITHOUT long experience in telephone affairs a person who refers to things which affect a system is likely to use language which is decidedly amusing to the initiated. A correspondent has recently written to us that "A woman residing in Blue River township, near Greenfield, Ind., was the innocent cause of paralyzing a telephone line running from Greenfield to Westland in Hancock county."

It seems that she brought about this terrible injury with a no more extraordinary instrument than a common spoon. When called to the telephone she happened to have a teaspoon in her hand, and becoming interested in the conversation, which was presumably a long one, she placed the spoon on the top of the telephone box. When through talking she returned to her work and forgot the spoon, which by some jar was knocked against the two binding posts, short-circuiting the line, and consequently putting all telephones on it out of commission. Incidentally, the humor of the report was heightened by the statement that "It required two days for an expert troubleman to discover the cause of the trouble."

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Legal Snares Untangled

CONDUCTED BY A. H. McMILLAN.

COMPANY'S RIGHT TO REQUIRE SAFE CROSSING OF WIRES WHEN CITY DOES NOT.

Will you please answer the following in your valuable paper, in the department of "The Telephone in the Courts"? We have an opposing company starting in our town. Its franchise states that when its wires cross ours, the bottom arms must be five feet above our top one, which is not the case. The town council refuses to demand a change, saying that if they are satisfied we must be. The wires of which I speak are bunched among ours, and should we ever string wires at this crossing again we would be obliged to go above their wires.

Can we compel the company to obey the franchise if the town council does not?

The company is incorporated in our state, but holds no franchise except a city franchise. O. K. H.

THE fact that the town council refuses to require your competitor to comply with the franchise in the location of its wires at points where they cross your wires does not deprive you of your right to demand a change. The franchise is a law which must be obeyed by both companies, and is enacted not for the protection of the city authorities, but for the protection of the companies themselves. Therefore it is your right to insist that the law shall be obeyed. Your remedy would probably be an injunction obtained in a court of equity to restrain the competing company from stringing its wires at points of crossing in an unlawful manner. Louisville Home Tel. Co. vs. Cumberland Telegraph & Telephone Co., 111 Fed., 663.

INJURY TO THE TROUBLE MAN.

Will you advise me as to the law in Illinois in the following case: A trouble man working for a company had a case of trouble, where a permanent signal showed in the office and in putting his test set on the line he found that it was crossed with an electric light wire, but could not get away from it and was made unconscious. He fell about 40 feet, and was injured by a broken limb and will be crippled for life.

Is the company responsible for all bills and what about further employment? H. L.

THE company is not responsible for his injuries unless it is to blame for the crossing of the electric light wire and the telephone wire. From your statement of the case, it does not appear that the telephone company was at all responsible for damages. Even if the telephone company was to blame for the crossing of the telephone and electric light wire, we do not believe it would be liable in damages to the trouble man, because, from the nature of his employment, he assumed the risks of such accidents as caused his injuries. The company would therefore not be responsible for his bills nor obliged to give him further employment.

ENFORCING JOINT USE OF TELEPHONE POLES.

AT Mobile, Ala., the city is endeavoring to force the Southern Bell Telephone Company and the Home Telephone Company to comply with an ordinance requiring the joint use of telephone poles. The ordinance requires the company owning the poles to rent them to the other company at the rate of fifty cents per year per cross arm. The Board of Public Works prior to February 7th made an order requiring the Bell Company to allow the Home Company to string its wires on the Bell poles on Claiborne street. The Bell Company gave the Home Company notice not to trespass upon its property. The board then made an order allowing the Home Company to set four poles on the street, and where the poles were set alongside of the Bell Company's poles, the board required the latter company to take its wires from its own poles and to string its wires on the Home Company's poles within thirty days. The thirty days' time expired March 10th, and as the Bell Company had not acted, the city electrician, under orders from the Mayor, with the assistance of several men in the employ of the city, cut down the four poles of the Bell Company. The Bell Company then applied for an injunction restraining the City of Mobile and its officials from interfering with the poles, wires and apparatus of the company.

The position of the city is that the right or franchise to use the streets, alleys and public places for putting wires and poles thereon for telephonic connections, granted to the Southern Bell Telephone and Telegraph Company, by an ordinance approved Dec. 13, 1889, is void, because the city at that time had no power in its charter to grant a franchise to use the streets for any purpose.

The city also claims that the ordinance of June 24, 1901, under which the Southern Bell Telephone and Telegraph Company claims the right to place wires and poles on and under the streets of Mobile, is also void, because the telephone company did not comply with Section 23 of the charter of the City of Mobile, approved March 5, 1901, which requires all applications for a franchise to be advertised and the city paid a certain percentage of the gross receipts for the use of the franchise, or a lump sum annually, and therefore the occupation of the streets by the telephone company with poles and wires is without the authority of law, and hence a public nuisance.

The company contends that the ordinances are contracts, and moreover, that the state law which provides that telephone and telegraph companies may set their poles and wires on the "margin of public highways," authorizes the telephone company to erect them on the streets of the city. The city, on the other hand, contends that the phrase "margin of public highways" refers to country roads and not to city streets.

INCOMPLETE ADVERTISEMENT CAUSES SUIT FOR DAMAGES.

AT Hopkinsville, Ky., five suits for $500 each have been started against the Cumberland Telegraph & Telephone Company charging that it had failed to have the word "incorporated" appear in advertisements which were published in a local newspaper. In the advertisement complained of, the word "incorporated" was not spelled out, but the abbreviation "inc." appeared. The suits were begun by the county attorney under a recent ruling of the Court of Appeals that the abbreviation did not fulfill the law.

WHEN POLE CUTTING IN PRIVATE ALLEY IS JUSTIFIED.

AT Baltimore, Md., a verdict has been rendered in favor of Samuel Ruth, who was sued for $1,000 damages by the Maryland Telephone Company for cutting down one of its poles. The decision was made by Judge Stockbridge without a jury. His ruling was that, under certain circumstances, the telephone company is not entitled to recover for the destruction of its poles.

"The Court rules, as a matter of law," Judge Stockbridge stated in his ruling in the case, "if the alley in the rear of the premises of the defendant (Mr. Ruth) was a private alley, laid out for the benefit of the property of the defendant, and other property abutting thereon, and the plaintiff (the telephone company) without a permit, and without permission from anyone possessing authority to grant such permission, placed in the alley, and upon that portion of it abutting upon the lot of the defendant, a pole, and the erection of the pole interfered with or tended to interfere with the necessary, reasonable and proper use of the alley by the defendant for the purposes for which the alley was laid out; and if the defendant gave the plaintiff notice to remove the pole, and after the lapse of a reasonable time after such notice had been given the pole was not removed, and then the defendant proceeded to remove the pole by cutting it down, then and in that event the plaintiff is not entitled to recover."

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Flat Rates vs. Measured Service*

CONCLUSIONS EMBODIED IN THE REPORT OF THE SPECIAL COMMITTEE OF TELEPHONE EXPERTS APPOINTED BY THE CITY COUNCIL OF CHICAGO.

WE have pointed out earlier cogent reasons why the line of the average flat rate subscriber costs the telephone company, as a rule, more than the line of the average measured rate subscriber, largely on account of the overloading of the lines and the increase of the unavailing calls by the flat rate subscribers' use; and the foregoing study of the load curves indicates further that the way in which the calls become distributed in the system makes it possible for the telephone company to arrange its operating force more economically to take care of its present measured rate service, and therefore actually enables the telephone company to make the cost of operating less per individual call of the measured rate service than it can for the flat rate service.

On the flat rate basis the telephone subscriber who makes calls over his telephone line twenty or more times per day (perhaps even fifty or one hundred or more times) pays the same price as the subscriber who uses his telephone only eight or ten times a day, and the flat rate being an average rate which enables the telephone company to come out at the end of the year with its expenses all paid and a balance to pay interest on its investment, it is obvious that the small user pays more for his telephone than his use makes necessary and the largest user pays less for his telephone than his service probably costs the operating company. This is so manifestly unfair that there can be no justification in maintaining a strictly flat rate telephone charge in large cities, with the present known methods of operating. Such charges for telephone service are as unjust as similar charges would be if made for electric light or gas. It will be recognized as absurd to suggest that a gas company should charge a fixed rate per year for each gas burner in a place of business, regardless of the number of hours that the place of business is open. The differences between the amount of gas used per burner in a store that closes at 5:30 p. m. and in a saloon which closes at midnight, or between an office which is on an upper floor of some well-appointed and well-lighted office building and a shipping room which is in the basement of the same building, are so great that it is manifest that this flat rate method of charging would exercise the utmost injustice between customers—affording a long hour user a large amount of gas at a price which might not pay the company for the expense of the manufacture thereof, while the short hour user, paying the same price per burner, would be paying an extremely excessive price per cubic foot for the gas in order that the losses entailed by the long hour user should be recouped to the company. This method of charging was in vogue by electric light companies in the earlier days of electric lighting, before electric meters were reasonably perfected. It was then usual to charge business houses a fixed rate per incandescent lamp installed and connected to the lines, and residences a different and smaller rate per incandescent lamp installed, the assumption being that the residence would use the lights for fewer hours per day. This method of charging brought many electric light companies to the verge of bankruptcy, and as long as it was in vogue electric lighting remained a luxury. With the advent of charges for actual consumption (that is, measured rates) electric light came within the reach of the greater proportion of people who now use it, and the expansion of the electric lighting service was brought to a reasonable mark.

The meter question is one which creates some difficulty in the telephone field. Nickel prepayment telephone boxes provide for a large number of users. There are now in use in Chicago over 68,000 nickel prepayment telephones, and the number is apparently steadily increasing. In New York city the measured rate lines are individually equipped with meters in the exchange offices, and the Chicago Telephone Company has developed a meter which makes it impossible to register more than a single unit for each message over the line. We believe that this meter used in connection with the measured service lines that are not equipped with prepayment boxes will prove accurate and satisfactory, in case the City Council grants the Chicago Telephone Company a franchise. This meter is arranged in such a manner that no record can be made until the connection with the subscriber's line has been set up in the manner required for making a communication. Thereupon the operator by pushing a button may cause the meter to register one unit, and however many times the button may be pushed thereafter, through oversight or malice of the operator, no additional messages will register on the meter until the connection has been taken down after the completion of the message and a new connection has been made, as upon receiving another call from the subscriber. This guards against an excess number of calls being registered against any subscriber through oversight on the part of the operator. We see no reason why this meter arrangement should not prove commercially accurate and satisfactory, and we recommend its adoption for the instances of metered lines in case the Chicago Telephone Company should be granted a franchise.

We have allotted a great deal of time to the study of this question of rates and are convinced that *the general use of measured rates results in improvement in the service by the reduction of unavailing calls and also results in the reduction of the average cost to the consumers through the elimination of useless calls from the various stations, and makes it possible to place the lowest rate for the least expensive service within the means of the largest possible number of people.* We are also convinced that *the general adoption of measured rate service will bring about a more uniform rate of calling during the day, which will make it possible to ultimately reduce the price per message,* thus bringing about a further reduction in the average cost of telephone service and especially a reduction to the large class of users which subscribe for telephones of the lowest cost.

A partial application of flat rates is practicable in connection with business telephones which have sufficient service to make it worth while to set aside a special line or lines for outgoing calls only, since such lines do not interfere with the convenience of others, and do not cause a piling up of unavailing calls, because their busy state in no wise affects calls coming from other lines. Such flat rate outgoing service lines must in each instance be accompanied by a sufficient number of incoming lines, to be furnished at a relatively small rental. A partial application of flat rate service may also be applied in connection with residence telephones and with neighborhood exchange telephones, and is here justified because the restricted character or restricted circle of use makes the average calling rate per telephone relatively small and approximately equal for all users of the same class. In connection with residences this use of flat rates in a large city has some serious disadvantages, but its advantages probably overcome the disadvantages.

*Concluded from issue of June 1st.

O. F. FRENCH TO BUILD CANADIAN TELEPHONE SYSTEMS.

O. F. FRENCH, former general manager of the Cuyahoga Telephone Co., of Cleveland, and more recently managing engineer of the National Engineering Co., of Baltimore, has been appointed deputy minister of railways, telephones and telegraphs for the Province of Manitoba.

Mr. French will direct the work of building municipal and government owned telephone systems. He assumed his new duties May 21st, at Winnipeg, which is the capital of the province.

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CLIMAX OF GOOD FEELING AT THE BANQUET.

(*Continued from page 374.*)

the condition in Tennessee. Independent telephony is no longer suppliant in Tennessee, for the people ask Independent men to come into the state to build systems for their relief.

T. Harvey Ferris, of Utica, responding to the toast, "The Empire State," hit several nails on the head and awoke his listeners to a high state of enthusiasm. Said Mr. Ferris: "The Empire State brings two messages to this meeting. First, as there is nothing in the Independent business which will warrant continual watering of stock, the Independents must be honest with the public to succeed. Aim only to pay legitimate dividends on actual capitalization. If at the beginning a company is earning 50 per cent reduce rates; should dividends dwindle to 5 per cent through expansion of the system, the public will not ask that the plant be operated on such a basis, but will permit an increase." Mr. Ferris's second message was: "Plan standardization of equipment, accounting, and methods of operation." Mr Ferris insisted that of all things necessary to the success of Independent telephony he could think of no influence for development greater than local interest in each company and local control. It has been proven that under a concentration of control in the management the success is far less.

"The Telephone in Modern Life" was responded to by Helm Bruce, of Louisville, Ky., in a happy manner . Mr. Bruce, an attorney prominent in the Independent movement, entertained the guests with many amusing and serious stories, pointing out almost miraculous features of telephonic communication. He said that of all things wonderful the telephone is the most marvelous achievement of human ingenuity.

H. D. Critchfield, of Milwaukee, was expected to speak on the topic "After a While." A telegram from him, however, expressed his regret, that owing to the strenuousness of the Milwaukee fight he was unavoidably detained. Mr. A. A. Goddard, of Topeka, Kan., detailed as a substitute, proved to be a good one. Mr. Goddard entertained the delegates by a most delightful impromptu talk. The banquet finally closed with "Auld Lang Syne," sung by the assembled delegates, led by the Weber quartet.

Final Papers and Election

THE final session of the convention opened Thursday morning with the paper "Toll Line Clearing Houses," by J. M. Plaister, Ft. Dodge, Iowa. This paper was splendid in every detail. During its reading Mr. Plaister urged the discontinuing of the issue of coupons at discount as a practice unfair and detrimental to the business.

The report of the Committee on Physical Standards was submitted by E. E. Clemen..

C. S. Norton conducted the question box and many questions of importance were responded to and discussed. A question which brought forth animated discussion was "What is the best illustration to impress upon the public the fact that the cost of operating per station increases with the increase in the number of subscribers?"

Mr. W. Gilbert Thompson answered this question, saying that in his opinion the best way was to keep accurate account of comparative costs and take the public into the company's confidence. He would take a committee of representative citizens and bright business men through his exchange and let its members see how many calls a day come into the operating room. Let them first be taken into a small exchange, then visit a larger exchange, and in this way see for themselves the difference in the amount of labor and equipment per line.

Mr. Woodbury reported for the finance committee. Mr. Têtu moved that the members of the finance committee receive the thanks of the convention for their able work in raising funds to carry on the important work of the association. Approval of this was signified by a rising vote.

Mr. Davis reported for the Committee on Incorporation. Mr. Boylan and Mr. Scott followed this report with answers to the question concerning the increase in cost of operating an exchange as the subscribers increase. Another interesting question referred to the Committee on Litigation and Legislation was, "What is the best protection against wire thieves—could the association successfully take hold of the matter?" The question, "Is there not some way in which the use of the shield can be protected," was referred to the committee on legislation.

After the close of the "question box" the assistant secretary read the paper, "Telephone Securities as an Investment," by W. L. Moellering, Ft. Wayne, Indiana. This was followed by an interesting paper, "How to Handle Long Distance Telephone Business," by Frank Hart, Pittsburg.

"Making History in the Canadian Northwest," by Frances Dagger, told in an exceptionally interesting manner of the recent successful conflict with the monopoly in Canada.

"Post Office Telephones and the Washington Situation" was

W. Gilbert Thompson, One of the Leaders from Ohio.

E. B. Fisher, Michigan, Elected Fourth Vice-President.

C. E. Wilson, Gen'l Manager Keystone Telephone Company, of Philadelphia.

C. H. Judson, Now Engineer of the Independent Telephone Company, Seattle.

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discussed by Charles E. Sumner, Oregon. Mr. Sumner said that at its next session Congress would be asked for a franchise whereby Independent telephones may be installed in the capital city of the United States. He pointed out that the growing sentiment against monopoly would cause the people to support the Independent demand for a square deal. He advised that a committee be appointed by Congress to give the association a fair hearing. Independent telephony needs recognition in the capital of the nation more than in any other city. He urged members to exert persistent efforts along all proper lines of political activity. He closed amid great enthusiasm by saying that at the next meeting Congress will grant a franchise for the establishment of Independent lines in Washington, D. C.

C. W. Kline, Pennsylvania, offered two resolutions which were adopted by convention as follows:

WHEREAS, The Independent Telephone Company of Rhode Island has petitioned the city council of Providence for permission to install an Independent system in that city; now therefore, be it

Resolved, That we in convention assembled, representing four million Independent subscribers, hereby request that honorable body to grant this petition to the end that these four million subscribers may not be disbarred from direct communication with the representatives of the industries of that great city, and be it further

Resolved, That a copy of these resolutions be forwarded to the mayor and city council of Providence.

WHEREAS, The delegates and visitors to this annual convention have been royally entertained by the committees and the management of the Auditorium Hotel, and

WHEREAS, The membership of this convention appreciates the kind efforts made on their behalf at this banner convention; therefore, be it

Resolved, That we extend to the various committees and to the hotel our hearty thanks for their kindness; and be it further

Resolved, That we extend the thanks of this convention to the manufacturers and supply men for their fine exhibits and for the material financial support which they have so liberally extended to the association; and be it further

Resolved, That this convention extends its hearty thanks to the Press Committee, Associated Press, the Scripps-McRea News Service, and the press of the country in general for their full and impartial reports of its proceedings.

Several letters of regret were read from absent members. Two letters of invitation were read, one from Atlantic City, inviting the convention to meet at that place next year, another from Mayor C. M. Becker, of Milwaukee, extending an invitation to the association to meet in that city next year; these were referred to the executive committee. The committee on nominations reported for election as officers for the coming year the following names:

President, Theodore Gary, Missouri; first vice-president, Frank L. Beam, Ohio; second vice-president, Charles E. Sumner, Oregon; third vice-president, E. B. Fisher, Michigan; fourth vice-president, A. L. Hoover, Canada; secretary, Charles West, Pennsylvania; treasurer, Manford Savage, Illinois.

This report was adopted. In acknowledgment, President Gary said in part: "It is needless to say that I highly appreciate the honor conferred upon me in my election as president of this association. I appreciate this honor more than I would being governor of any State in the Union. I wish to state that I shall carry out my motto, which I use in my business, 'render good service.' I will try to give a square deal; endeavor to serve the entire interests represented, not one section. I congratulate this convention on its great success; congratulate the association for the high class of its representatives, who are assembled here." Mr. Gary concluded with numerous other remarks, commending the organization.

The committee on constitution and by-laws reported several amendments made to the constitution. An amendment was moved and adopted to drop the words "of America" in the name of the association, so that it shall hereafter read "International Independent Telephone Association."

The meeting then adjourned, leaving the members with the memory of one of the most successful and inspiring gatherings which they have ever attended.

What the Manufacturers Showed

STANDARD UNDERGROUND CABLE CO. had an attractive exhibit in charge of J. R. Wiley, J. E. O'Neill, W. M. Rodgers, Chicago; E. J. Pietzcker, Richard Houck, St. Louis; A. A. Anderson, L. L. Parkinson, Pittsburg.

NUNGESSER ELECTRIC BATTERY CO., Cleveland, O., represented by H. G. Robbins, treasurer, Thos. G. Grier, Chicago, general sales manager, and H. S. Greene, of the Chicago office, exhibited the well known "1900" dry battery. The climax of all battery construction was its gigantic 1900 cell, about seven feet high, which had a door and was really a telephone booth in disguise.

AMERICAN SEWER PIPE CO., Pittsburg, was represented by W. R. Adams, sales manager. This company manufactures a high grade line of conduit, both single and multiple duct.

EUREKA ELECTRIC CO., Genoa, Ill., exhibited a 200 line visual signal magneto switchboard of a new type, a 50 line magneto board, having a new type drop and a full line of magneto and

G. R. Johnston, Manager of the Columbus Citizens' Telephone Co., Columbus, O.

H. D. Critchfield, a Leader in Wisconsin Telephone Development.

J. B. Rhodes, an Able Ohio Worker for the Independent Organization.

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common battery telephones and parts. V. H. Messenger, secretary and treasurer of the company, was in charge, assisted by J. H. Bell, E. L. Larabee, F. H. Holroyd and A. H. Miller.

EVERSTICK ANCHOR CO., St. Louis, had a good display of Everstick anchors. Jasper Blackburn, president and general manager, attended the convention.

CENTURY TELEPHONE CONSTRUCTION CO., Buffalo, had an interesting exhibit of Century apparatus, the center of which was a new 200 line switchboard equipped for 20 trunk lines, just completed for Cornell University. The company was represented by W. W. Kidney, chief engineer; C. H. Macklin, sales manager; G. F. C. Bauer and W. O. Rhode.

UNITED BRASS MFG. CO., Cleveland, exhibited the Corcoran wipe joint machine. As its name signifies, this appliance does the work of the plumber in wiping cable joints and very effectually, it is said. The company was represented by W. J. Schoenburger, secretary, and Thomas B. Daley.

JULIUS ANDRAE & SONS CO., Milwaukee, had an interesting display. The most attractive feature was a 200 line magneto board with a Treco electric whistle connected to the night bell circuit. The company also showed new type inexpensive volt ammeters, its well-known iron box party line condensers, etc. F. H. Andrae, secretary; H. P. Andrae, treasurer and general manager; J. C. Schmidtbauer, vice president, and W. S. Pearne, advertising manager, attended.

THE WIRE AND TELEPHONE COMPANY OF AMERICA, Rome, N. Y., was represented by H. A. Hammond, manager of sales; F. M. Potter, Jr., and A. J. Kennedy. The company exhibited Easophones, a combination telephone which is said to be rapidly growing in popularity.

FRANK B. COOK, manufacturer of protective devices, was represented by Mr. Cook, H. Roy Cook, J. F. Thompkins, F. R. Parker, F. A. Rader, E. E. Dewey, S. C. Harvey and J. M. Moore. The exhibit consisted of central station, cable and substation protective devices, the newest of which is the No. 10 graphite automatic resetting heat coil, and a new porcelain cable terminal. There was also a display of miscellaneous telephone specialties, Cook's self-welding wire joint, guy clamps, etc.

MCROY CLAY WORKS, Brazil, Ind., was represented by "Kirk" Kirkpatrick, sales manager, who showed a full line of underground conduit and a motto: "Your cable is as safe in McRoy conduit as your money in government bonds."

AUTOMATIC ELECTRIC CO., Chicago, exhibited a 100 line unit of a common battery automatic switchboard, with twelve telephones connected. There was shown also a combination wire chief's and trouble clerk's desk, just completed for the Home Telephone Company, of Champaign and Urbana, Ill. A duplicate set, four frequency harmonic converter, built for the Montana Independent Telephone Company's automatic exchange, at Butte, Mont., was also shown. The company was represented by C. L. Fisher, sales manager; F. L. Middleton, assistant sales manager; H. H. Woodworth, advertising manager, J. A. Russell, R. J. Eubanks and J. E. Fisher, of the sales department, and Wm. Harman and J. S. Engle, of the engineering department.

LOUD SPEAKING TELEPHONE.—One of the most interesting features at the convention in the line of exhibits was the loud speaking telephone, manufactured by the INTERNATIONAL TELEPHONE MFG. CO., Chicago. It will transmit speech to a large audience. The sending station was placed in the company's headquarters and receivers with megaphones were placed in various locations of the hotel waiting rooms and rotunda. Vocal solos and whistling entertainments were transmitted through the instrument and heard throughout the hotel. The International Company's exhibit also contained a full line of telephone apparatus for large and small public exchanges. The International Telephone Mfg. Company's representatives present were Henry Shafer, president; John C. Burmeister, secretary and treasurer; F. E. Freers, manager; B. Carlin, superintendent; T. Crozier, H. M. Coulter, F. Shaw and J. Hoffenkemp.

L. M. ERICSSON TELEPHONE MFG. CO., Buffalo, had a display in charge of J. R. Powers, Des Moines, Ia.; H. B. Hewitt, Chillicothe, Mo., and J. H. Montague, manager of sales, Buffalo, N. Y. A feature of the display was the rural line equipment for ground lines equipped for pulsating current. With this equipment the rural ground lines will throw the drop at central when only central is wanted and when they ring on each telephone the operator is not disturbed. In this exhibit there were also a new four party harmonic system, sundry telephone parts, new lineman's test set, switchboard parts and a general display of accessories. The company gave a demonstration of its generators ringing 100 bells simultaneously.

UNIVERSAL POLE AND POST PRESERVING CO., Circleville, O., had an exhibit showing its very interesting method for preserving poles. The exhibit was in charge of H. P. Folsom.

MILLER ANCHOR CO., Norwalk, O., has a new one in the form of a mechanical expanding auger for enlarging holes which attracted considerable attention. The exhibit was in charge of G. H. Miller, president, and F. B. Miller, vice president.

HOMER ROBERTS TELEPHONE CO., Chicago, showed its secret service and lock-out system. This party line system gives the limited user practically the same exclusive service as if he were served by an individual line. The display was in charge of A. F. Rosenberger.

INDIANA STEEL AND WIRE CO., Muncie, Ind., was represented by E. F. Kitselman, secretary and manager, and Robert Miller, manager.

A feature of the exhibit of the VOTE-BERGER CO., LaCrosse, Wis., was a 3,200 line C. B. iron wire ballast switchboard, magneto and central energy telephones and magneto switchboards. The company also made a display of framed blue prints of its circuits and D. and T. anchors. During the convention a demonstration of a pendant telephone was carried on. In charge of the exhibit were C. D. Enochs, engineer; J. F. Peiffer, engineer; M. I. Berger, secretary and treasurer.

Attending to the wants of the visitors and explaining the features of the exhibit of the CENTRAL TELEPHONE AND ELECTRIC CO., St. Louis, Mo., were James S. Cuming, president; Charles H. Wallis, vice president, and L. G. LeBourveau, sales manager. Its specialties are the Arrow cable trolley, Becker pressed steel terminals, Ajax dry battery and a special line of inside and outside protectors.

AMERICAN STEEL AND WIRE CO., Chicago, cordially received its guests, those doing the honors being Burley Ayres, Frank Conklin, Illinois representative; C. S. Knight, Western manager, and G. W. Quigley, of Kansas City.

Many visitors to the convention stopped at the exhibit of the CHICAGO TELEPHONE SUPPLY CO. On exhibition was a large and splendid line of sample supplies. Greeting the visitors were George A. Briggs, president; G. W. Brown, secretary and treasurer; J. Edwin Myers, Dayton, O.; D. F. Roseborough and F. P. McIntosh.

W. G. NAGEL ELECTRIC CO., Toledo, O., showed a splendid display of "Ready" pay-out reels, Hercules malleable iron anchors, Robinson distribution racks and "Swisher" cable hangers. Harry E. Adams was in charge.

UNITED STATES COIN REGISTER CO., Toledo, O., with Gary S. Powell in charge, displayed its registering pay station.

PRESIDENT E. B. OVERSHINER, of the Swedish-American Telephone Company of Chicago, was in charge of the company's exhibit and entertained many visitors and delegates. The display attracted a great amount of attention. A. V. Overshiner and Stanley A. Duvall assisted the president.

STROMBERG-CARLSON TELEPHONE MANUFACTURING CO., Rochester, N. Y., was represented by A. M. Haubrich, Chicago manager; William Bowen, J. J. Nate, Paul D. Myers, E. P. Shafer, H. A. Jones, Charles F. Speed, H. C. Slemin, advertising manager; J. P. Cracraft, sales manager; O. M. Leich, asst. chief engineer, and A. O. Stigberg. The exhibit consisted of a full line of telephone equipment and on display were a switchboard equipped with harmonic ringing attachment, generator call telephones and samples of dry core and wool cables. At the company's office a complete central energy multiple switchboard was in operation.

ROCK ISLAND BATTERY CO., Cincinnati, displayed its new pat-

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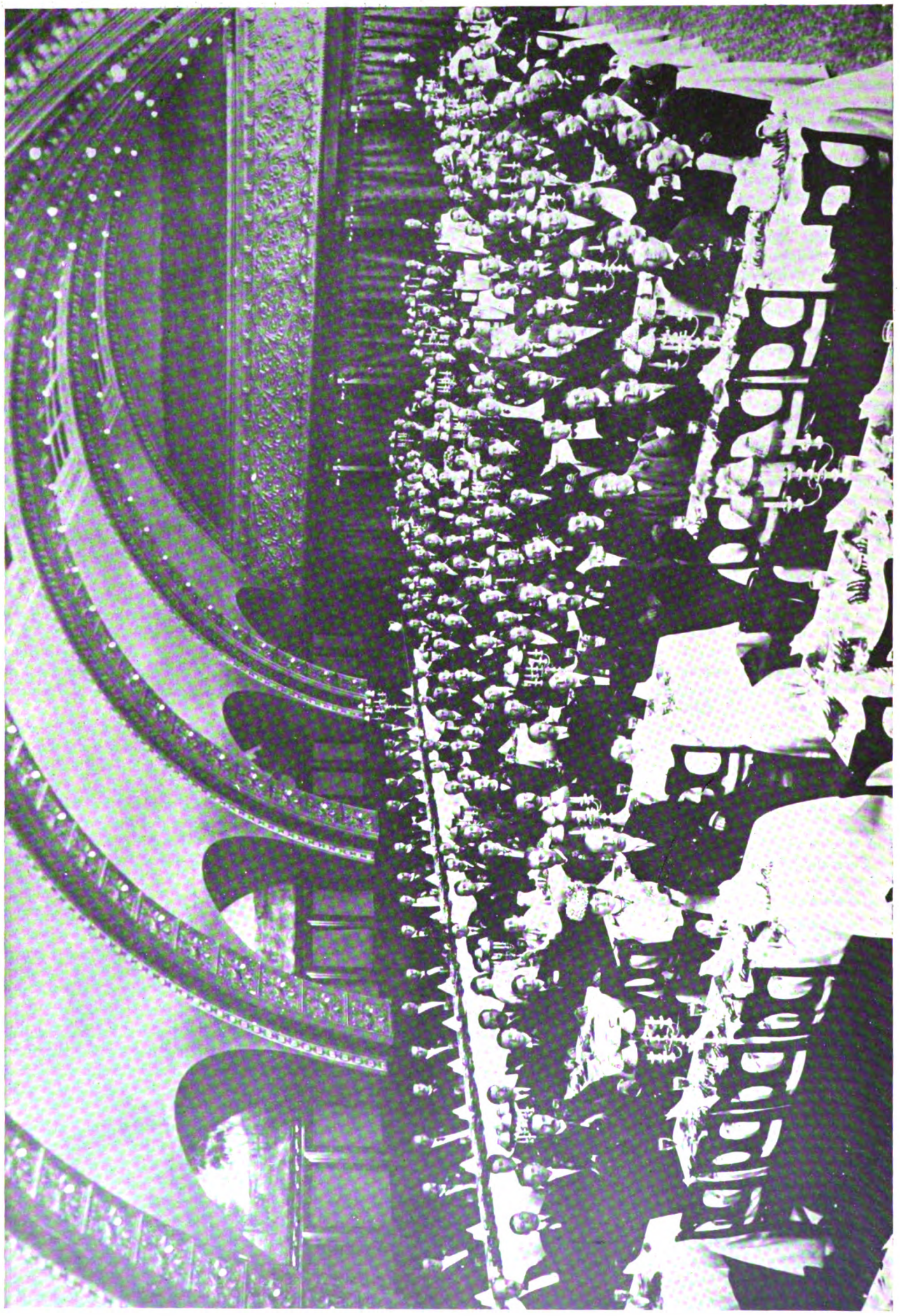

The Great Wednesday Night Banquet of the International Independent Telephone Association, at the Auditorium Hotel, Chicago, June 5, 1907.

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ent dry cells which attracted much attention. In charge were Myer A. Loeb, general manager, and Charles Wilson.

DURANT ELECTRIC SUPPLY Co., Chicago, had a neat exhibit with H. S. Durant, F. W. Pardee and James Crook looking after the welfare of visitors.

SELECT TELEPHONE MFG. Co., with a demonstration of its lock-out system, attracted many visitors. In charge were C. E. Juvenal and William Bruce, Jr.

Superintending the display of the NORTH ELECTRIC Co., of Cleveland, O., were C. H. North, president; J. F. Engle, Raymond Hendrickson, George B. Pratt, C. D. Boyd, A. A. Miller and A. A. Marrs. The exhibit was complete in every detail.

WESTERN TELEPHONE MFG. Co., Chicago, showed two types of instruments, the Economist and Ideal. The Economist is designed especially for rural lines and the Ideal is of the central energy type for magneto exchanges. The company also manufactures all regulation types of central energy switchboards. In charge of the exhibit were C. O. Johnson, treasurer; E. A. Anderson, acting manager; Eugene L. Brown, sales manager; G. W. Peacock, engineer.

AMERICAN ELECTRIC FUSE Co., Muskegon, Mich., exhibited a complete line of protective apparatus and the display was well arranged. F. G. Jones, J. A. Kenny and G. W. Rodormer were in charge.

S. B. CONDIT, JR., & Co., Boston, manufacturers of the Condit marlin cable hangers had a neat exhibit in charge of P. R. Fisher.

CLAUDE L. MATTHEWS, assisted by O. R. Johnson, represented the firm of W. N. Matthews & Bro., St. Louis. In this exhibit a practical demonstration of the Hargis cable splicing joint was made. A number of the Stombaugh guy anchors were seen and a test of a waterproof cable spliced joint in a fish tank filled with water.

THE CHANCE MFG. Co., Centralia, Mo., showed the new Sky-Rocket lightning arrester, with A. B. Chance in charge of the demonstration. The Sky-Rocket is made for any size and kind of wire.

A full line of harmonic bells and a splendid display of all improved telephone appliances were shown by the LONG DISTANCE TELEPHONE MFG. Co., South Bend, Ind. R. E. Willard was in charge.

The Columbia dry cell was exhibited by NATIONAL CARBON Co., Cleveland, O. Those who entertained visitors were E. J. Kenny, A. B. Ward, Wallace O'Connor and M. H. Moffett.

On display at the headquarters of the ELECTRIC APPLIANCE Co., Chicago, were testing instruments and a complete line of telephone material and supplies. Robert Mitten, manager of the telephone department, was in charge. A handsome souvenir in the form of a watch fob, with the shield in colors, was given all visitors. Mr. Mitten was assisted by M. J. Blakemore. M. L. Scobey, of Nebraska, was present.

From Wheeling, W. Va., was the MOUNTAIN STATE ELECTRIC Co., with an exhibit of the Poole lock-out system and Hall's special fuses and cable terminals and a special line of hardware. A. F. Poole and J. F. Frasher superintended the exhibit.

A complete line of magneto and central energy switchboards and central energy appliances was shown by the MONARCH TELEPHONE MFG. Co. The exhibit was very complete and up to date. In charge of the display were E. E. Yaxley, treasurer; J. C. Hubacher, vice president; W. H. Trimm, secretary; T. L. Dunlap, A. J. Carter and R. C. Stone.

AMERICAN ELECTRIC TELEPHONE Co., Chicago, exhibited the Leich four party system and the Zabel eight party system, also a full line of magneto and central energy apparatus. The principal feature of the display was the round bar magneto generator, also new central energy apparatus, similar to that installed recently in the new switchboards furnished by the company at Camden, N. J.; York, Pa.; Topeka, Kas., and Auburn, Neb.

P. C. Burns, president, and J. G. Ihmsen, general manager, devoted most of their time to the duties involved by the convention committees. Those looking after the comfort of the visitors were: Max W. Zabel, sales manager; A. B. Ferdinand, C. J. Larson, W. J. Stanton, John S. Stratton, Ira Butterfield and H. P. Blackledge.

THE CARNAHAN-SHERWOOD Co., Indianapolis, exhibited a fine line of account books for telephone companies. The concern was represented by H. E. North, C. N. Glover and R. H. Carnahan.

CRAWFORDSVILLE WIRE & NAIL Co., Crawfordsville, Ind.; the SCRANTON BUTTON COMPANY, Scranton, Pa., and the ACME RUBBER Co. occupied the same room on the first floor, where they had a splendid exhibit of their individual lines of appliances and materials. In charge were H. E. Cobb, manager and sales agent, and G. D. Wilson.

DEAN ELECTRIC Co., Elyria, Ohio, extended a welcome to all comers. The tired delegate was privileged to enter, make himself comfortable in a cosy chair and regale himself with a fragrant Havana. The company this year did not make a feature of an exhibit, but instead entertained its friends in a cordial, hospitable way. Those assisting with the entertainment were W. W. Dean, A. E. Barker, George A. Scoville, W. H. Scott, A. V. Smith, L. G. Bowman and E. M. Ford.

THE STERLING ELECTRIC Co., Lafayette, Ind., having previously arranged the reading room of the Auditorium, greeted its friends and displayed its hospitality in a way that will not soon be forgotten. The room was artistically decorated with flowers and ferns, and Steinbach's orchestra furnished music during the meeting from ten to twelve and from two to five each day. The Sterling Company had special souvenirs of the official program, which were distributed. Each visitor was also given a souvenir miniature telephone,. It has heretofore been the custom of the Sterling Company to make an exhibition of complete telephone apparatus, consisting of switchboards, telephones and protectors, and the radical departure in the display at this meeting was an attractive feature. It had a special exhibit on the fourth floor of telephones, switchboards, etc., which the visitors were invited to inspect. The Sterling Company was represented by W E. Doolittle, president; W. R. Coffroth, secretary; S. B. Fowler, electrical engineer; Evan Shelby, sales manager; H. T. Doolittle, purchasing agent; C. R. Brown, sales department, and O. P. Reed, sales engineer.

THE AMERICAN ELECTRICAL NOVELTY AND MANUFACTURING Co., New York City, showed its line of Ever Ready batteries and other specialties.

THE REPORT OF THE ASSISTANT SECRETARY.

(*Continued from page 377.*)

the 1905 convention were continued, copies of them being furnished to all of the Independent telephone journals and special bulletins covering the situation in New York State, which threatened to affect practically the whole country, were mailed to all of the Independent telephone companies in the United States and Canada, as well as to the executive officers of the various associations and to the press and journals. In addition to the foregoing, notices covering important subjects have been sent out whenever necessary to the executive officers of the state associations and leaders in various parts of the country, and on a number of occasions special articles presenting the Independent situation have been published in papers outside of the technical press, either as a matter of general information or in answer to misleading articles published by our competitor.

General.

At present there are Independent telephone associations in twenty states and Canada, and a number of new organizations pending; seventeen of the existing organizations, including Canada, have applied for membership in the International Association. A number of others are considering the matter and may present their applications at this convention. The International Association keeps in close touch with all of these organizations, whether members or not, and on matters of general interest all of them may be considered as affiliated with the International.

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Independent Telephone Securities as an Investment*

By Wm. L. Moellering.

ANY enterprise launched under unbroken bright skies may reach a point where it becomes inviting to investors, but until it has successfully withstood the test of adverse conditions usually sure to come, its enduring ability to pay dividends and keep its principal unimpaired is a matter of conjecture.

Any industry handicapped in all directions at the start and subject to unscrupulous competition and which, notwithstanding, carries its business to a successful issue and a growth beyond expectations has earned the right to invite capital. This being true the investigating investor must view with favor securities issued by carefully conducted Independent telephone companies.

Passing through years of constant warfare directed against them by one of the former great monopolies—a competitor who had at its command unlimited capital, a press bureau, trained legal and electrical talent, etc., while the Independents had no experience, no long distance service, exceedingly limited manufacturing facilities, with capital suspicious, threatened and actual lawsuits, the Independents have met every condition and emphatically have won the long-fought battle. To-day they are equipped with the best electrical appliances, both in the manufacturing and operating branches, enjoy a large and rapidly increasing long distance service, legal battles are decided in their favor, the investor's confidence is gained and competition has largely ceased to be a disturbing factor.

Almost without exception wherever both companies occupy the same field the Independents outstrip the old monopoly. In character of service they excel in a marked degree, in growth they surpass tenfold, and financially they are able to pay dividends, meet obligations and create a safe surplus. Has it ever occurred to you what the record will be in ten years from now under the changed conditions? Has the investor compared the present market value of Independent securities, their rise during the recent years, with the present market quotations of the Bell, or its subsidiary companies' stock as compared to past years? It is eloquent of the situation.

Is it not true that the best criterion of the value of a security is the regard in which it is held among its home people who are in a position to best know its strength or weakness? Is it not a fact that home people are the largest and most constant buyers of Independent telephone stocks and bonds, in many instances absorbing the full issue? Witness Toledo, O.; Ft. Wayne, Ind.; Los Angeles, Calif.; Kansas City, Mo.; St. Louis, Mo.; South Bend, Ind., Grand Rapids, Mich.; Louisville, Ky.; Cleveland, O.; Muncie, Ind., and hundreds of the larger cities in all sections of the country, where home capital takes either all or the larger part of securities placed on the market by the local Independent companies.

If you happen to live in a community where capital is timid, try a tabulated statement showing in detail your earnings, expenses, growth, with all future possibilities, select a number of the larger telephone companies who have operated a number of years and give their experience, their rise in stock values, and let your statement contain a list of other home industries in comparison. You will be surprised at how many good industries in your midst fail to show as good results as do you.

The regular dividend ranging from 3% to 10% now being paid by most Independent companies, and the creating of a surplus fund after having made proper deductions for depreciations has made the investor take notice, and former prejudice fostered by the opposition has given way to impartial investigation with most encouraging results.

It must be patent to every observer that Independent telephone companies are more carefully and economically conducted than the Bell. Local men of broad business experience constitute their boards of directors and they are in constant close touch with the company's affairs. Another great element of strength consists in the sentiment of the local community which is as a rule outspokenly and actively favorable to Independent interests.

Viewed from the standpoint of failures Independent telephone securities are noticeably strong, the per cent. of failures as compared with other industries being strikingly small. There are in the United States over 7,000 Independent telephone companies with a capitalization of $350,000,000. Dun and Bradstreet weekly reports of bank, trust company and commercial failures very rarely include an Independent telephone company.

* Abstract from an address delivered at the International Convention, June 5, 1907.

MEMBERSHIP OF SPECIAL COMMITTEES AT THE CONVENTION.

Committee on Amendments to the Constitution.

Charles E. Sumner, chairman, Oregon; F. H. Woods, Nebraska; Theodore Gary, Missouri; M. B. Overly, Kentucky; Judge Smith, New York.

Committee on Credentials.

A. C. Lindemuth, chairman, Indiana; Alpheus Hoover, Canada; G. S. Shanklin, Kentucky; W. H. Nelson, Kansas; W. H. Bassett, Illinois; T. H. Ferris, New York; G. W. Thompson, Ohio; E. H. Pollock, Nebraska; F. D. Houck, Pennsylvania; J. B. Ware, Michigan; J. W. Barnes, West Virginia; E. H. Moulton, Minnesota; W. T. Wynne, North Carolina; F. H. Stow, California; Houck McHenry, Missouri.

Committe on Resolutions.

James S. Brailey, Jr., chairman, Ohio; C. W. Kline, Pennsylvania; S. S. Lichty, Iowa; W. J. Uhl, Indiana; W. B. Woodbury, Michigan; Manford Savage, Illinois; H. D. Critchfield, Wisconsin.

Nominating Committee.

D. E. Sapp, chairman, Ohio; O. C. Snider, Missouri; Charles West, Pennsylvania; Richard Valentine, Wisconsin; H. S. Baker, Iowa; E. L. Barber, Kentucky; M. L. Clawson, Indiana.

Auditing Committee.

Charles West, chairman, Pennsylvania; C. C. Deering, Iowa; C. S. Norton, Indiana.

BELL RATE-RAISING WIPES OUT TOWN SYSTEM IN TENNESSEE.

BY raising its rates on subscribers in Fredonia, Tenn., it is reported that the Cumberland Telephone & Telegraph Company recently lost all its subscribers but two. The rates have been high enough, the subscribers said, but the company announced that the rates would be raised on June 1. A mass meeting was called and a resolution adopted and sent to the company declaring that they would not patronize the company if the increase was insisted upon. The company did not reply to the communication and all the telephones but two were taken out last Saturday.

OBITUARY.

JUDGE J. E. BOYNTON, of Waco, Texas, died May 22, after a very short illness. His death will be seriously felt by all concerned in the Texas Independent telephone movement, as he was ever ready with most excellent advice in legal matters and held considerable stock in telephone companies. He was a director in the Brazos Valley Telephone Company, the Texas Telephone Company, the South Texas Telephone Company, and the Home Telephone Company of West.

Judge Boynton was a very able lawyer, having a high reputation throughout the entire state. He was always a gentleman even in the most trying circumstances, honorable in every sense of the word, and one whose friendship was valued very highly by all who knew him.

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THE DEADLY PARALLEL

AUTOMATICS VS. LEVERS

With GRAY PAY STATIONS you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

GRAY TEL. PAY STATION CO.

HARTFORD, CONN.

OUR '07 CATALOGUE SENT ON REQUEST

FOR SALE

For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

FOR SALE—We offer for sale the following assortment of Stromberg-Carlson Central Energy telephones displaced by our installation of Automatic equipment:

250 Type E central energy desk telephones with stationary head, corrugated nickel-plated pedestal, black enamel metal base, bipolar receiver, gold electrode transmitter.

1,000 No. 204 desk telephones with adjustable transmitter, knuckle joint arm, nickel-plated pedestal and base, same transmitter and receiver as above.

100 Type C. E., latest style desk telephone with No. 4 transmitter, all rubber bipolar receiver, black rubber pedestal, nickel-plated base, induction coils at end of cord instead of in base. A modern instrument.

1,000 Former type ZZ, later known as No. 37, business style central energy wall telephones complete with triplet set consisting of combined switch-hook, transmitter with adjustable arm, bipolar receiver, etc. This instrument is provided with shelf.

100 Former type Z, later known as No. 35, residence style, central energy wall telephone without shelf, otherwise same as No. 37.

These instruments are in good condition and will be sold at a reasonable figure. Prices will be furnished upon application to W. F. LAUBACH, Manager, Akron People's Telephone Co., Akron, Ohio. 822

FOR SALE, dirt cheap, 100 series 'phones, with Ericsson transmitters, Holtzer-Cabot generators and oak cabinets. Good as new. Address, R. Valentine, Janesville, Wis. 848

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WANTED—Position with telephone company on construction or instrument work. Five years' experience, best of references. Address Box 836, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 836

WANTED—Back numbers of AMERICAN TELEPHONE JOURNAL for January, February and March, 1907. Address, stating lowest price, Box 840, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 840

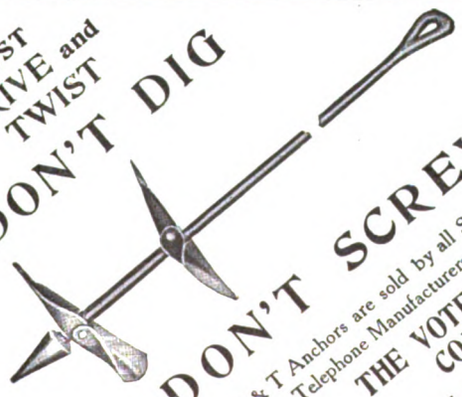
WANTED—Telephone workmen; 3 foremen, 30 linemen, 6 cable splicers and 10 outside trouble men, to take places of strikers. Permanent positions at good wages for first-class men. State experience and give reference when applying. National Telephone Company, Wheeling, W. Va. 847

WANTED—Position as manager or superintendent of telephone exchange. Central energy or magneto. Can furnish best reference as to ability, habits, etc. Address Box 841, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 841

WANTED—Salesman for telephone instruments and supplies for New York State, Pennsylvania or the Middle West. An exceptional opportunity for the right man. Address Box 843, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York City. 843

WANTED—Position as engineer of new telephone company entering the field, or with a company controlling a system of exchanges. Can give best of references. When replying, please state salary and prospects. Address Box 849, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York City. 849

JUST DRIVE and TWIST DON'T DIG



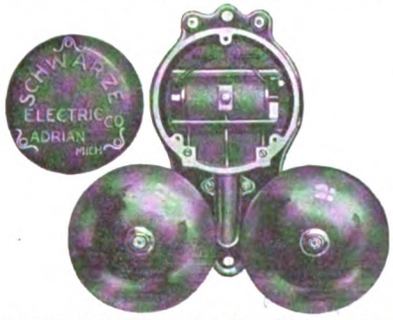
DON'T SCREW

D & T Anchors are sold by all Supply Houses and Telephone Manufacturers. Made only by

THE VOTE-BERGER COMPANY
LA CROSSE
WISCONSIN

Magneto Loud Ringing Extension Telephone Bells

Gongs 6-inch to 10-inch



All Resistances — All Weatherproof

Efficiency, Durability and Price will interest you.

Schwarze Electric Co., Main Office & Factory, Adrian, Mich.

Branches { Chicago, 324 Dearborn St. St. Louis, Mo., 708 Victoria Bldg.
Pittsburg, Renshaw Bldg. San Francisco, 903 Atlas Bldg.

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Your Question—Our Answer

CALL WIRE SYSTEM.—(871.)

Will you kindly inform me if there ever existed in this country a telephone system in which the subscribers' telephones were not supplied with a calling device such as a magneto generator or some such arrangement and how the system was operated. As I understand it, this was before the days of common battery and I do not get the idea as to the method adopted.

C. G. R., New York.

There were at one time several exchanges of this type in the United States, the first being in New York city, where it was introduced in 1878, and was operated on what was termed the "call wire" principle. This system was provided with "call" or "order" wires, one to each operator, which was connected with a group of instruments numbering from thirty to fifty, or as many as the operator could conveniently care for.

This call wire was altogether distinct from and in addition to the subscriber's ordinary lines, the operator's apparatus being in direct connection with it at all times. When a subscriber desired connection with another line he pressed a button on his instrument, thus cutting his telephone in circuit with the call wire, and without further ado told the operator the number of the line with which he desired connection, at the same time advising her of the number of his own line. The operator thereupon connected the two lines with a conducting cord having a plug at each end. In some cases the subscriber then signalled the person desired by means of a generator provided in his instrument; in others the operator was provided with means for calling.

Upon the completion of his conversation the subscriber again pressed his call button and informed the operator that the connection might be taken down.

CORDLESS SWITCHBOARD.—(872.)

We have several business houses in our city to whom we could sell private branch exchange service which would comprise about five or six telephones in each instance aside from the switchboard. Will you advise us how we may wire up a small board of the cordless type, that is, where keys are used instead of plugs and cords for connecting the different instruments?

We desire to use the cordless board for several reasons, the chief of which is that the patrons desire them, and then we figure that we will not be at a continual expense for the repairing of cords.

W. O. D., Iowa.

In Fig. 872*a* is shown a diagram of the wiring of a six drop cordless switchboard that will probably meet your requirements.

The lines are connected to the middle contacts of the ringing keys in the first row, while the drops, which are supplied with the

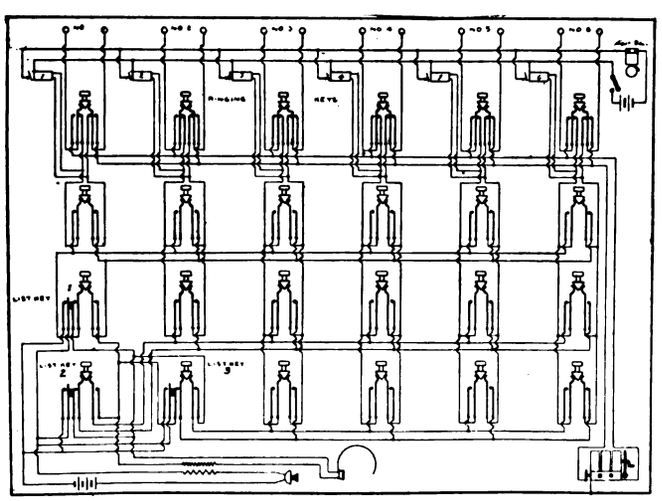

Fig. 872a.

night-bell circuit, are bridged across their inside contacts, and the generator is, as usual, across the outside contacts of these keys. The middle contacts of the ringing keys are each in their turn connected to the inside contacts of the keys in the first connecting row. The outside contacts of each key in this row are connected together as indicated. By closing any two keys in this line any two of the circuits may be cross-connected.

Bridged across the wires connecting the outside contacts of this connecting row is listening key No. 1, which is the first key in the third row. Connecting row No. 2 is wired in a similar manner

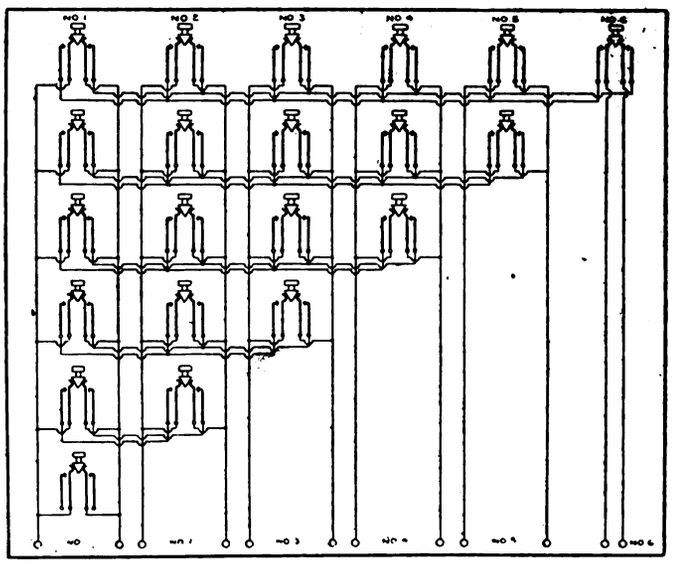

Fig. 872b.

except that there is no key for line No. 1. Its listening key is the first in the fourth row. Connecting row No. 3 omits keys for lines No. 1 and No. 2, and its listening key is the second one in this row. The receiver and transmitter with the battery and induction coil are bridged across three ringing keys in the manner shown.

To use the board, when a call comes in, turn down the key corresponding to the line in any one of the three connecting rows and then the listening key corresponding to this row. To make a call turn down the ringing key of the line asked for and then the proper connecting key in the same connecting row as that in which the first key is located.

Fig. 872*b* shows another method of wiring the connecting keys and is known as the triangular system.

PLAN OF ORGANIZATION.—(873.)

What general plan of organization is followed by the large telephone companies in relation to departments which have to do with outside work? Also kindly outline briefly the nature of the duties of the different departments.

H. R. R., Canada.

The organization plans of the majority of the large telephone companies comprise six different departments, which have to do with the operating affairs as follows:

The engineering department, whose business is to design the plant to be used and to supervise its construction; the construction department, which has to do with the building of the plant; the maintenance department, which keeps the plant in condition necessary for its proper operation; the supply department, which has to do with the feeding of the plant; the contract department, whose business is to see to the growth of the plant on a profitable basis; the right of way department, whose function is indicated in the title.

STANDARD FOR NUMBERING CROSSARM PINS.—(874.)

A SUBSCRIBER who has heard of several methods of numbering pins on cross-arms is anxious to know what managers throughout the country consider the best way. He calls attention to the fact that some say "number from left to right with back to office," while other say "from left to right when facing west or north." He would like to hear from different sections of the country to enable him to determine what is generally considered the best practice. The Editor will be glad to publish statements of practical experiences tending to show advantages of one method over the other.

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Easophones
The WIRE and TELEPHONE COMPANY of AMERICA
ROME, N.Y.

LONG DISTANCE HAND TELEPHONE

Lowest Maintenance Cost

SOLID METAL FRAME ENCLOSED IN VULCANIZED HARD RUBBER

Only Nine Exposed Parts

No Exposed Connections

Practically Indestructible

LET US SEND SAMPLE EQUIPMENT

In the Home.

The Flexiphone

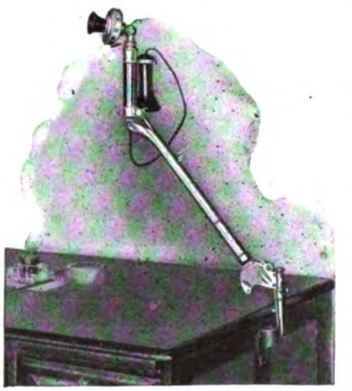
The only telephone that is especially adapted for the HOME and the Busy Man's Office.

Takes almost no room—finds its own place. Suits the long or short—either sitting or standing. No loose cords to be tangled—no falling or broken instruments.

The FLEXIPHONE is a business getter in residential districts

Cuts Maintenance Cost in Half
Makes Dividends GROW

The FLEXIPHONE is now in use by the largest exchanges and is sold by every standard manufacturer, equipped with their own transmitter and receiver.



In the Office.

Holtzer-Cabot Electric Co., Boston, Mass.
General Sales Agents for New York and New England.

Oliver Manufacturing Co., Philadelphia, Pa.
General Sales Agents for the Atlantic, Gulf and Western States and Foreign Countries.

Holtzer-Cabot Electric Co., Chicago, Ill.
General Sales Agents for the Middle West.

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From Here and There

LONDON TELEPHONE SERVICE BEING SEVERELY CRITICISED.

EUROPEAN telephone systems seem to be continually provoking the wrath of their subscribers, and the occasion in nearly every case is poor service. At the present time the people of London are the principal objectors, and are making many complaints of specific faults with the service. The most common of these are slow connections, false calls, obtaining of the wrong number, cut-offs occurring altogether too frequently and the inevitable complaint that lines are reported busy when nobody is talking on them. It seems to be very difficult to keep the standard of service up to a point which will at all compare with modern standards, and the difficulties in the large cities seem to be felt with especial severity.

A UNIQUE ADVERTISEMENT.

THE following demand appeared in the columns of the Pittsburgh *Leader* on April 29, 1907, which is probably unlike any advertisement that has ever appeared in the history of a telephone company:

Wanted.—3508 Fifth avenue, Pittsburg. The Bell Telephone Co. having removed my telephone, all persons desiring to communicate with me are requested to use the P. & A., No. 200 Park.
(Signed) M. W. EVERSON, M.D.

Its appearance is said to be due to the fact that Dr. Everson has had trouble with the Bell Telephone Co. In Pittsburg, subscribers are charged a certain sum for each call. The doctor asserted that in his bills of late he had been charged for a great many calls that he never made. He refused to pay some of the exorbitant bills and complained to the president, but alleges that the company's employees called at his house and in his absence removed the telephone. Dr. Everson has prepared to bring mandamus proceedings and a suit for damages against the corporation.

UNITED STATES FOREST SERVICE TO EXTEND ITS TELEPHONE LINES.

THE National forest reserves in Oregon, Idaho, New Mexico and Colorado are to have telephone lines constructed during the coming season under the direction of the United States Forest Service, according to recent reports from Washington. It is stated that in the Bitter Root Forest in Idaho the supervisor has been authorized to cooperate with the ranchmen to construct a line from Koohis to the forks of the Clearwater River, a distance of twenty-five miles. A twenty-four mile line is also planned to extend from Tin Cup to Dorchester, on the Gunnison reserves in Colorado.

Apparently the lines which have already been constructed have proved to be of sufficient value for the protection of the forests from fires, and assistance in the administration work, to make it well worth while to continue the movement.

PACIFIC COAST INDEPENDENT COMPANY PUBLISHES NEWS BULLETIN.

AT Coupeville, Wash., the Eclipse Telephone Company is making a vigorous struggle against its Bell opponent. The Independent company started in business in April, 1902, and since that time the Bell company has been obliged to materially reduce its rates. In spite of the determined opposition with which it has met the Independent company has done very well, and is receiving the hearty support of the majority of the people in its territory.

The enterprise of the management is indicated by the method it has adopted to keep its patrons posted on the advantages of Independent service, and to keep them in mind of actual benefits, financial and otherwise, which they have themselves received since the Independents first began operating. Mr. O. S. Van Olinda, the secretary and manager, issues from time to time a four-page paper which contains information of this nature, as well as bulletins which will be interesting from a service standpoint, and a list of recent additions to the subscribers' list, to serve as a directory supplement. The bulletin is attractively arranged and illustrated with some very pleasing views of local scenery. This idea is one which would seem to be worth while for companies in other sections to investigate.

INDEPENDENT COMPANY WINS FRANCHISE BY ELECTION AT CRETE, NEBRASKA.

RECENTLY the people at Crete, Neb., had a chance to decide whether or not they wished to have Independent telephone service. The vote was so strongly in favor of the Independent company that there could be little doubt of the popularity of the Independents in this vicinity. At a popular election 354 votes were cast in favor of the franchise, while it was opposed by only 87. In conformity with the people's wishes, as shown in this election, the council granted a franchise, five members only voting against the proposition. This the town, and only one voting against the proposition. This franchise was awarded to the Western and Saline Telephone companies, and by them transferred to the newly organized Crete Telephone Company, which will build and operate an exchange. This successful campaign was carried on by B. G. Miller, of Martell, manager of the Kramer-Denton Telephone Company, Neb., who is also to take charge of the Crete Telephone Company, moving his headquarters to the latter place. He was assisted by Frank H. Woods, C. W. Nunemaker and other well known Nebraska Independent telephone men.

FOLK WILL FIGHT USE OF TELEPHONE IN GAMBLING.

GOVERNOR FOLK proposes to fight the gambling evil in Missouri in every form. In order to combat this form of vice he has called a special session of the legislature. The forty-third general assembly enacted a law to prevent race-track gambling, but this does not cover the ground fully. The supreme court of the state declares the act does not apply to bookmakers telephoning their bets out of the state to be registered. This ruling practically nullifies the statute. The governor recommends the enactment of a statute making it a felony to register a bet upon a horse race either on a blackboard or other substance, or to telephone or telegraph a bet on a horse race to any other state to be registered there. This statute was passed, but the emergency clause was overlooked, so that it will not go into effect until June 14, of this year.

TELEPHONE INTERESTS INVOLVED IN ARKANSAS LEGISLATIVE INVESTIGATION.

THE State Attorney of Arkansas is probing the alleged bribing in the State legislature when a bill introduced two years ago by certain Independent interests was killed at the last moment.

Up to the present time only two arrests have been made, but further developments are expected. Senator A. D. Du Laney is charged with accepting two hundred dollars from A. J. Kizer of Texarkana. It is reported to have been shown that the money was paid in the form of a draft handed to Senator Du Laney by Supt. Powell of the Southwestern Telegraph & Telephone Company, but the defendants claim the payment was made in connection with a real estate transaction.

A COSTLY CONVERSATION.

ONE of the most expensive telephone messages recorded recently was reported from Rutherford, Tenn., last week, when a strawberry dealer there paid $38 for an hour's talk with a jobber in St. Paul, Minn. This is an example of the extent to which the general public is becoming educated to the use of the long distance telephone over other methods of communication.

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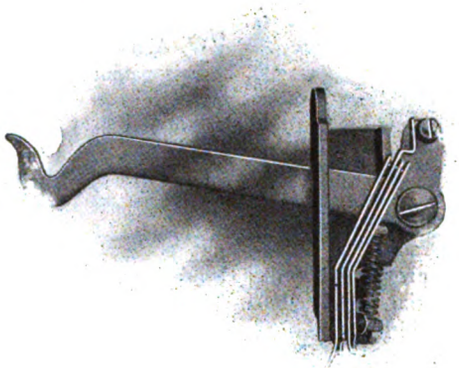
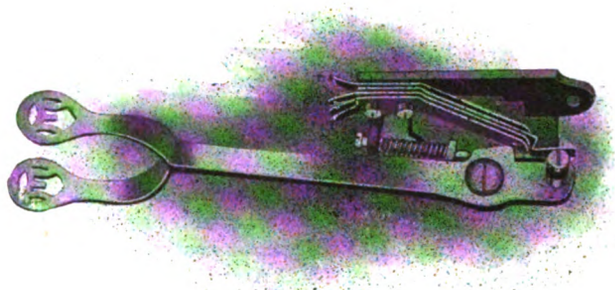
The Ericsson Switch Hook

shown by illustrations, is mounted on a base of stamped metal having a grey oxide finish.

The lever is made in one piece of hard rolled sheet brass heavily nickel-plated. The tension is obtained by a steel spiral spring, which is adjustable so as to adapt the switch hook to any weight receiver.





The springs are of German silver with platinum contact points. The spring group is entirely insulated from the base and lever. A hard rubber roller on the lever operates the main spring, eliminating wear and friction.

The same base may be used for the four different kinds of interchangeable levers which are used on the Ericsson Switch hooks. All switch hooks are self-contained and fastened to the telephone by two screws.

L.M. ERICSSON TEL. MFG. CO.
BUFFALO, N.Y.

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In the Field of Invention

TELEPHONE RECEIVER.

A. F. H. Davis, Oakland, California, patent 853,578, May 14, 1907; assigned to National Telegraphone Company, Rochester, N. Y.

This invention relates to a telephone receiver designed for use in conjunction with composite telephone and telegraph systems, in which the electromagnet coils are of very low resistance and the diaphragm of a non-magnetic material.

The action of the diaphragm is due supposedly to the production of Foucault or eddy currents therein. The inventor likens this non-magnetic diaphragm to the secondary of an inductorium. Means are provided in the construction for the proper adjustment of the diaphragm in relation to the poles of the electro magnets.

TRUNKING SYSTEM.

William W. Dean, patent 853,682, May 14, 1907; assigned to Kellogg Swbd. and Supply Co., Chicago.

This invention relates to a method of connecting subscribers' circuits terminating in different exchanges of the Dunbar or two wire type.

LOCKOUT TELEPHONE SYSTEM.

F. Vollmer, Winsted, Minn., patent 851,458, April 23, 1907.

This patent describes a step by step lockout selective system comprising three relays, a battery bell and clock work, together with an indicating device so arranged as to keep the connections in the corresponding instruments at a proper point of connection in the usual step by step method, the clock works arranging for a discontinuance of the connection within a predetermined length of time.

MOUTHPIECE ATTACHMENT.

J. W. Dolson, New York, N. Y., patent 854,472, May 21, 1907.

This device comprises a metal stamping arranged to slide over and grip the transmitter mouthpiece. It is provided with a spindle, upon which is rolled any suitable material which may be pulled before the mouthpiece and there held tightly, the object being to provide a clean surface for each telephone user.

INTERCOMMUNICATING SYSTEM.

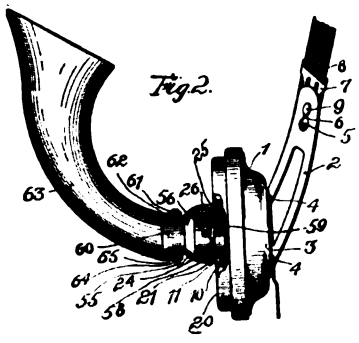
Albert Koch Andriano, San Francisco, California, patents (No. 841,478; dated Jan. 15, 1907; filed August 30, 1901; serial No. 73,801) and assigns to the Direct Line General Telephone Company, San Francisco, Cal., a secret service telephone system.

This patent covers a form of intercommunicating telephone system in which the inventor describes a method and mechanism so arranged that any station may call any other station and having a metallic talking circuit onto which no third station may connect during the period of connection.

BREAST TRANSMITTER.

J. A. Birsfield, Rochester, N. Y., patent 853,337, May 14, 1907; assigned to S. C. Tel. Mfg. Co.

This patent relates to a transmitter which may be used in con-



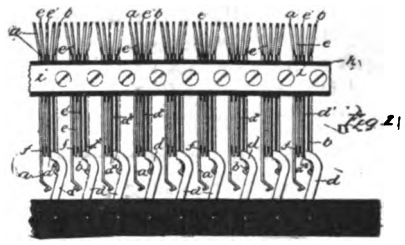
nection with a suspending plate and fastening and worn on the operator's breast. The main features described in the patent are the methods of construction, the chief of which is the substitution of a sheet metal arch in place of the heavy metal bridge usually employed.

In Figure 2 is shown the manner of attaching the swivel joint 26 carrying the curved mouthpiece 63 to the transmitter face plate 20.

SWITCH-BOARD SPRING JACKS.

F. R. McBerty, Evanston, and E. B. Craft, Chicago, Ill., patent 853,370, May 14, 1907, assigned to W. E. Co., Chicago.

This patent describes switch-board spring jacks in which the



spring *d* is so formed as to be rolled into tube shape at one end thus forming the "sleeve" thimble of the jack. The other springs and strip insulations are held and secured in position in the hard rubber portion *h* by the metal strip *i*.

RECEIVER HOLDER.

W. A. Beavan, Philadelphia, Pa., patent 853,672, May 14, 1907.

This patent describes a form of receiver holder consisting of two wire rods so shaped as to be readily attached to the telephone transmitter arm knuckle joint at one end. The other end forming a cradle in which the receiver may rest in close proximity to the subscriber's ear during conversation.

FUSE.

L. B. Buchanan, Woburn, Mass., patent 853,296, May 14, 1907.

The fuse described in this patent is of the enclosed type. It is provided with a spring acting finger, which is held under tension by the fuse wire. The object being a method of indicating the condition of the fuse by merely feeling of this spring finger, which will extend outward from the fuse enclosing cylindrical shell, owing to the cause of tension having been removed upon the disruption of the fuse wire.

INTER-COMMUNICATING SWITCH.

P. Hildebrand, Munich, Germany, patent 854,164, May 21, 1907.

This is descriptive of an automatic switch for telephonic installations. It has a single transmitting and receiving wire, together with a switch dial and a switch disk at each instrument. A contact lever on the disk is operated from the dial, which, when actuated, causes a signal at the instrument of the desired subscriber, also indicating at the same time the number of the calling party to the person called. The called person then moves the disk to the point of connection of the calling instrument, thus completing the talking circuit.

HEAT COIL.

F. B. Cook, Chicago, patent 854,272, May 21, 1907.

This patent describes a heat coil having a conical engaging portion which enters a slot provided in one of the line springs, and so constructed in the coil as to allow of a lessening of the spring pressure when an abnormal current traverses the winding of the coil. This lowering of the pressure allows the engaging portion to drop out of the retaining slot, and by virtue of its tension the holding spring flies back, carrying the coil with it and thus opening the line. When the coil thus held in the spring flies back the movable pin contained therein strikes against a spring provided to force it into its normal position before the fusible material has had an opportunity to harden. Thus the coil is resoldered and restored to its normal condition.

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Form G-90-G.	One subscriber to a sheet; carries account 4 years.
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THE Edwards-Hine Co.

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Why shouldn't they be?

Does the fact that we supply hundreds of big users *year after year*, in the face of all sorts of competition, suggest anything to you?

Send us a sample order to-day.

Telephone Blue Printing a Specialty.

H. B. CHRISTENSEN CO., Inc.
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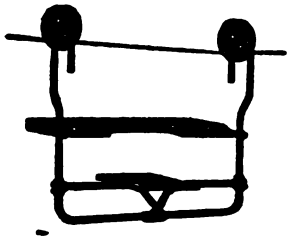

CAR NO. 1.

Once you compare the light, strong, yes and comfortable Security car alongside the heavy, unwieldy, unsightly cars, you'll simply have to say—"the Security for mine."

Our No. 1 car has adjustable seat. The table is extra. Cheap at the price. No. 1 looks well, cannot break, and costs little.

We make a special light car—our No. 3—for use in the repair wagon and to be carried about (it weighs only 28 lbs.)—very strong, serviceable and cheap.

Our Security Book gives prices—get it.

THE F. BISSELL COMPANY.
TOLEDO, O.,
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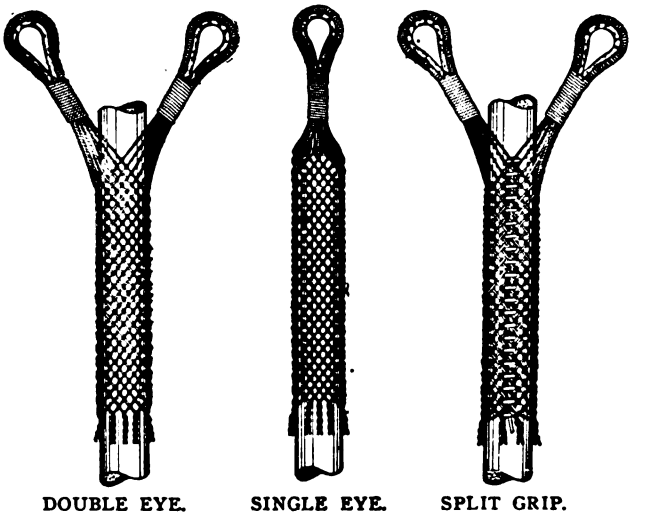
With Bull Dog Tonacity
Universal Cable Grips Hang On



DOUBLE EYE. SINGLE EYE. SPLIT GRIP.

The only grip that will pull slack and pull out cables without loss of time or slightest damage to sheathing.

If you are doing any cable construction and will so advise us on your letter head we will give you the opportunity of trying them without one cent of cost to you.

Write to-day.

UNIVERSAL CABLE GRIP CO., Syracuse, N. Y.

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From Shops and Factories

A NEW TESTING TELEPHONE FOR LINEMEN.

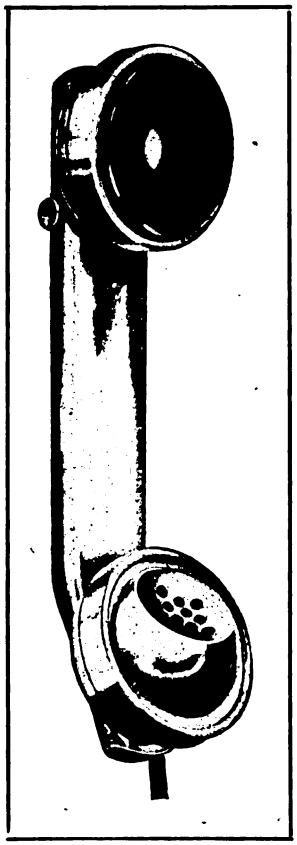
THE "all metal" combination telephone just placed on the market by the Stromberg-Carlson Telephone Manufacturing Co. embodies many features which makes it an especially good instrument for use as a lineman's testing telephone.

The construction of this No. 6-B central energy combination telephone is simple, neat and particularly strong to meet the requirements for this service. It is designed to stand a great deal of rough handling and the manufacturers claim that it has no parts which are perishable in any way. Moisture cannot get into any of the parts, which is an important advantage embodied in this construction.

The frame or handle is made of seamless brass tubing drawn especially for this design, and is so strong as to resist any attempts to bend or dent it. The regular solid back transmitter electrodes are enclosed in a case consisting of three pieces mounted directly on the frame by large screws. The perforated cast brass mouthpiece and clamping ring hold the diaphragm and diaphragm spring in place.

The receiver is the regular operator's type in a specially designed case, having all exterior sides and edges made of metal in order to prevent breaking the ear cap, which is enclosed as much as is practicable. As shown in the illustration, a transmitter cut-out button is arranged just opposite the receiver for preventing the annoyance of side tones taken up by the transmitter when listening in on the line in a noisy place. Both transmitter and receiver interior parts are accessible by unscrewing the clamping rings.

All parts are thoroughly insulated and heavily nickel plated, and a cord equipped with snap clips is furnished for making connections. The complete instrument is not more than eight inches in length and may be carried in the pocket.



Stromberg-Carlson Lineman's Combination Set.

About one hundred of these test sets are in use for central energy service and have received a variety of tests, which the manufacturers say have shown them to be very satisfactory as a lineman's test set under the best and worst conditions which are likely to be met.

The same form of instrument is furnished by the Stromberg-Carlson Telephone Manufacturing Co. with its No. 841, 842 and 843 generator call lineman's test set, including generator, batteries, etc.

F. W. PARDEE INTERESTED IN ELECTRIC SUPPLY HOUSE.

F. W. PARDEE, formerly general manager of the Frank B. Cook company, recently decided to turn his energy and knowledge of the telephone field into a channel in which their expenditure would bring him more complete independence. He has, therefore, associated himself and his delightful personality with three other equally energetic and enthusiastic young men, and is now playing the role of a little friend to all the world as treasurer of the Durant Electric Supplies Company, which has its headquarters located at 56 Fifth avenue, Chicago.

Mr. Pardee has been associated with the Frank B. Cook company for the last three years, in which time that company enjoyed much success, largely due to Mr. Pardee's untiring efforts and cheery good nature. Much regret was manifested by every one in the Cook organization upon receipt of his resignation, and before leaving he was tendered a surprise dinner party at which a handsome gold watch was presented him. In the back of this token were inscribed some very kindly sentiments. Previous to his association with this company he filled the chair of general sales agent of the Chicago Writing Machine Company.

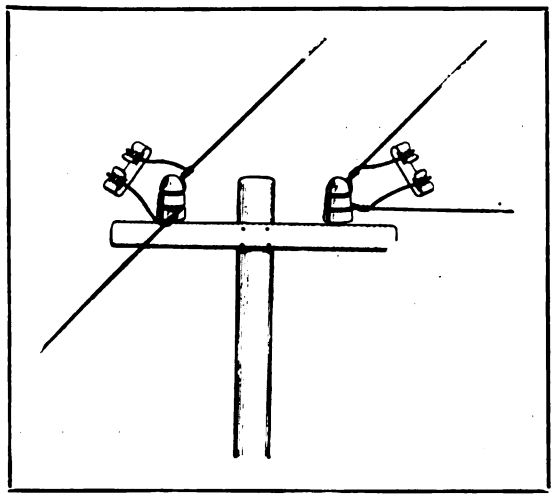
Mr. Pardee states that he and his associates intend working night and day, including all holidays, to keep their customers promptly and properly supplied with the best of everything the market affords.

CENTURY TELEPHONE CONSTRUCTION COMPANY, Buffalo, N. Y., has recently arranged to open up a branch house in Kansas City, and by June 15 the company will be in position to ship Century telephones and supplies from that point throughout the Southwest. The company also contemplates establishing a branch house in Chicago at an early date.

THE AUTOMATIC ELECTRIC COMPANY, Chicago, Ill., in its recently issued book, "Messages to New York," has reproduced many telegrams to the Mayor of New York city, showing the feeling of prominent city officials and telephone men toward Independent companies and the automatic system. The book is bound in a cover which carries out the idea of the title in a striking way.

As advertising material it deserves most favorable mention, and in addition to this will interest operating men who wish to keep in touch with general conditions.

THE LEEDS AND NORTHRUP COMPANY, 4901 Stenton avenue, Philadelphia, Pa., has recently issued a circular describing its L. & N. direct reading ohmmeter. This device reads resistance as an ammeter reads current, and is so designed that its correct operation is independent of fluctuations in the operating voltage. The scales are so designed as to make the percentage of accuracy approximately the same for all readings. The instruments may be furnished for practically any desired range. The company will be pleased to send full information on receipt of a request.



Arrangement of Fahnestock Test Openers.

FAHNESTOCK ELECTRIC COMPANY, 129 Patchen avenue, Brooklyn, N. Y., has just put on the market a new test opener. The purpose of this little piece of apparatus, as is well known, is to furnish a lineman an easy means of breaking the continuity of a line without the necessity of splicing it up again. The Fahnestock device, as actually used in practice, is shown in the accompanying illustration. It is constructed on the same principle as the well known Fahnestock spring binding post, and is claimed to embody the advantages of speed and facility in handling and other good points which the manufacturer will be pleased to explain to those interested upon receipt of inquiry.

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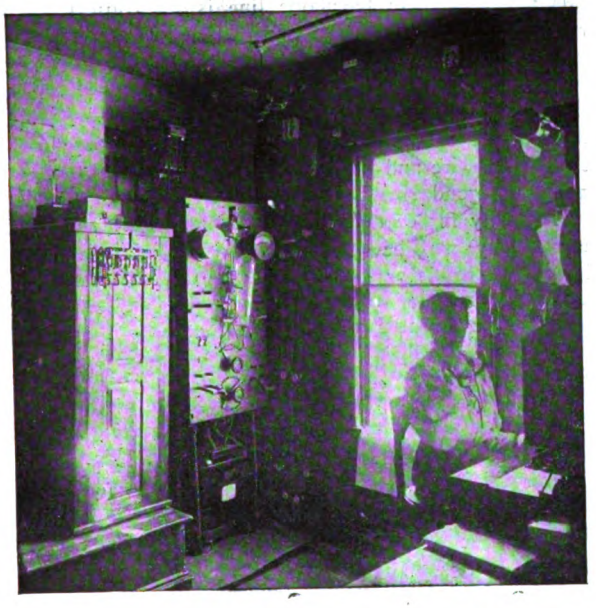
General Electric Company

Battery Charging Without Noise

The Mercury Arc Rectifier changes alternating current to direct current of any voltage required for charging telephone storage batteries.

It has no moving parts and makes no noise either in the room or in the receiver : : :

Current is rectified by mercury vapor in a vacuum tube without moving conductors or contacts of any kind.



The noiseless operation of the rectifier permits its location in any convenient space available.

Would you install any motor generator set so near the operator?

The entire plant occupies no more floor space than a motor generator power board and its operation involves no expert knowledge or experience.

Fully explained in Catalog 447 sent on request of managers

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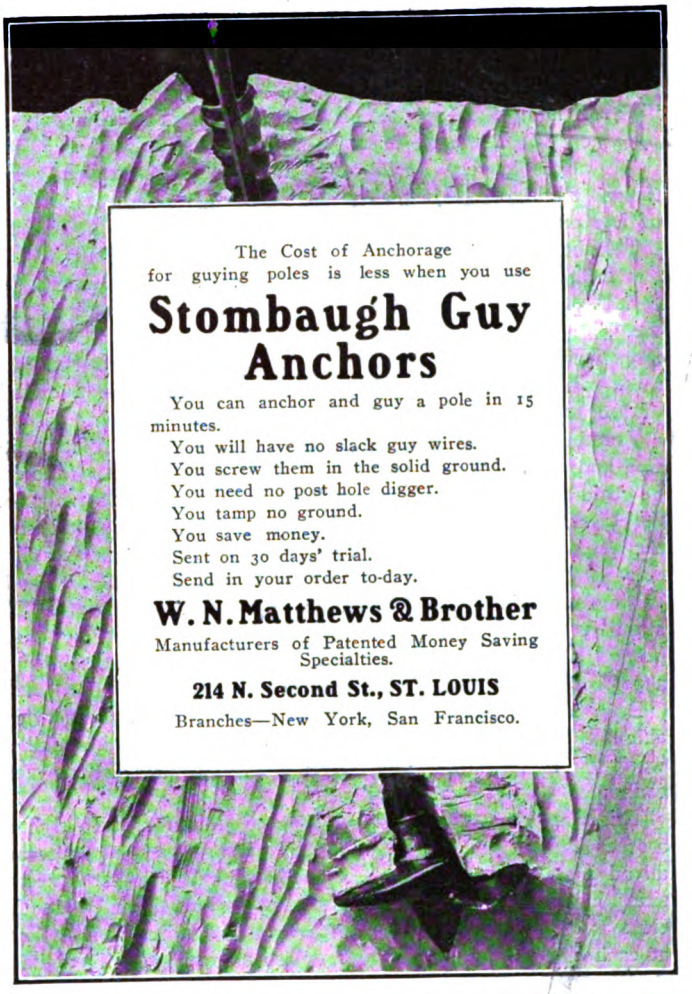

The Cost of Anchorage for guying poles is less when you use

Stombaugh Guy Anchors

You can anchor and guy a pole in 15 minutes.
You will have no slack guy wires.
You screw them in the solid ground.
You need no post hole digger.
You tamp no ground.
You save money.
Sent on 30 days' trial.
Send in your order to-day.

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Our experience and voluntary testimonials from our customers cause us to believe that we are making a telephone that in *ringing* and *talking* qualities is superior to anything on the market.

With your permission we will be glad to send sample telephones and let them, under your installation, tell the story.

Long Distance Telephone Mfg. Co.

SOUTH BEND, IND.

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From Shops and Factories

WHAT A FIRST-CLASS TELEPHONE SWITCH MEANS.

THE man who buys telephone switches has a natural tendency to select the cheapest, and why shouldn't he? They all look very much alike and the difference in price, though slight, rings just as pleasantly in his pocket as in that of any one else.

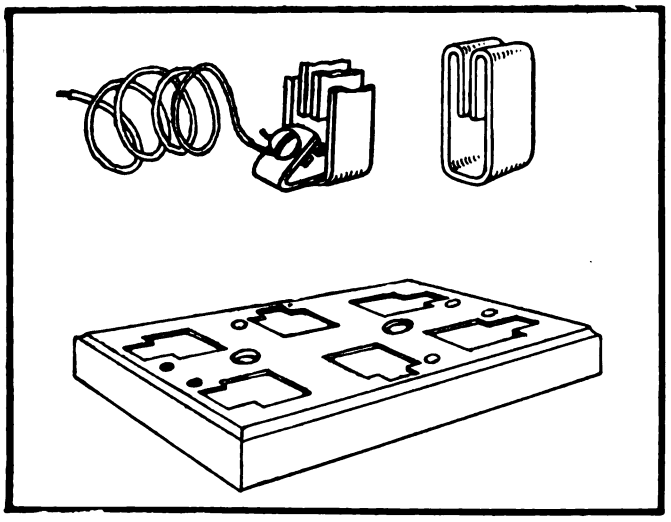
Telephone switches, however, are not liable to contain numerous faults, and as these are only evident when carefully looked for, the prospective purchaser should know just where to find them. The chief difficulties found in telephone switches come from warped bases, loosening of clips and poor alignment. All these difficulties are reduced to a minimum in a first-class switch of proper design and construction.

Trumbull Electric Manufacturing Company states that in its well-known switches it overcomes these difficulties as follows: Selected porcelain which is not warped is used exclusively for the bases. Recesses in the base hold the clips firmly and keep the alignment, so that when substantial screws fasten the clips there is absolutely no chance for loosening, and when self-adjusting clips hold the blade, the alignment is accurate. By self-adjusting clips the company means those that by their peculiar design enable the resilient force of the copper to insure a perfect contact with the blades.

Even with all possible care in mechanical design the serviceable switch must be correctly assembled, and it takes skilled workmen to do this. Small girls and boys, or shiftless men, cannot do the work properly.

This class of labor will from time to time forget to tighten a screw, fail to notice a defective clip or base, and so counteract all advantages in the design. In addition to these prime necessities in the production of a first-class switch there enters the element of convenience. It is necesary to have holes in the base at each clip for concealed work. Also a good point is to have the binding contacts raised from the base for convenience in attaching wires, and to have these wires held tightly under the head of the screws to avoid being cut or scored.

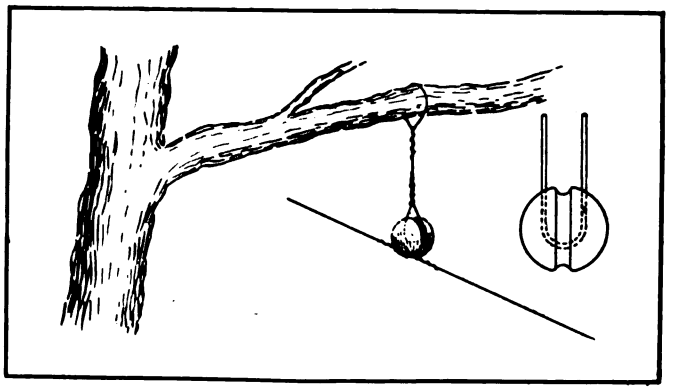
It pays for the man who wants satisfaction and the longest possible service to consistently consider the real points which determine the value of the goods. By writing to the Trumbull Electric Manufacturing Company at Plainville, Conn., one may obtain a great deal of very interesting general information about switches.



Details of Porcelain Base, Clips, and Wire Attachment of Trumbull Switch.

CLAYDON TREE INSULATORS.

IN the Southwest, where rural lines must be built between widely separated houses, it is very important that the construction should be as economical as possible. Charles Claydon & Sons, Kurten, Tex., have devised a form of support which they call a tree insulator, which has given good satisfaction in use in this section, and seems to be available in other localities. The method of its use and its form is shown in the accompanying illustration. It enables a telephone company to take advantage of natural supports, such as trees, fence posts, etc., all that is necessary being to attach the insulator by the loop which is provided at one end, the wire being moulded deep into the glass for this purpose. The telephone line is then inserted in the groove and tied in the usual manner.



Novel Method of Supporting Telephone Line, and Insulator Designed by Charles Claydon.

For use in dry climates the company manufactures a small size insulator, which has been used very satisfactorily in Texas, but the demand has been so extensive that it has now taken up the manufacture of a large insulator, giving a broader surface between the tie wire and the supporting loop. It is believed that this will give good satisfaction in northern climates, where a similar necessity for economy in constructing rural lines exists.

The company will be pleased to forward information and samples of this insulator to all operators of rural lines who are interested, upon receipt of a request.

RECENT DEAN CONTRACTS.

THE Dean Electric Company, of Elyria, O., has secured a contract for a three section magneto multiple switchboard for Nebraska City, Neb. This is the second large magneto board sold recently in this territory. The Nebraska City board will have six hundred lines equipped and the Dean company will furnish the plant complete, including the Dean harmonic 4 and 8 party selective ringing equipment, individual ringing keys on each position, and racks. A combined toll and rural board goes with this installation.

Grafton, W. Va., has ordered a common battery lamp signal non-multiple switchboard with 300 lines equipped for immediate use. The Dean Electric Company furnishes the cross connecting and relay racks, power plant complete and full Dean harmonic selective party line ringing equipment for party line service.

Colusa, Cal., has ordered six common battery switchboards. These boards are for the Colusa County Telephone Company. Each board is to be arranged for 4 and 8 party selective party line ringing. A complete Dean harmonic converter goes with the selective ringing equipment for each board. A great many of these harmonic converters have recently been ordered and they are said to be meeting with great favor on the Pacific coast. The Dean company states that when these machines are once understood they are greatly admired by the progressive telephone companies, as they are economical in operation and not prohibitive in first cost. This latter fact is especially important to the small exchange.

SAMUEL BERLINER, who has for the past year and a half been connected with the Automatic Electric Company, Chicago, Ill., has recently gone to Vienna, Austria, to accept a position as superintendent of a telephone manufacturing company.

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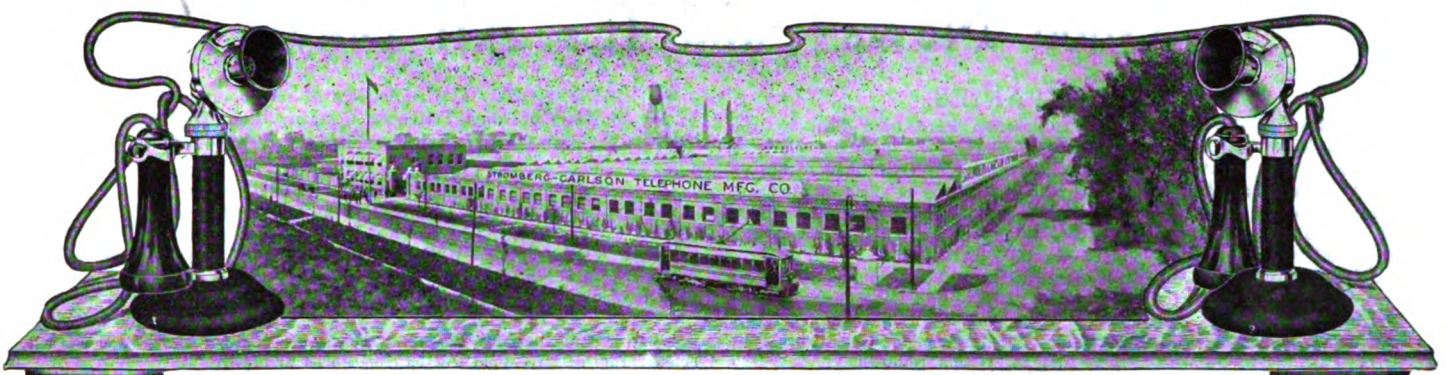


QUALITY

TELEPHONE AND SWITCHBOARD CORDS

RECEIVER CORDS--Green Silk--Worsted--Cotton

The conductors of these cords are made of sixteen (16) ends braided copper tinsel—braiding sixteen (16) No. 20—2 ply green cotton threads—external individual braiding twenty-four (24) green spun machine silk threads.

Tinsel—Average	breaking strength	*each thread*—24	ounces.
Cotton—Average	breaking strength	*each thread*—25	ounces.
Cotton—Number	yards single thread	*per pound*—8400	
Silk —Average	breaking strength	*each thread*—48	ounces.
Silk —Number	yards single thread	*per ounce*—570	(Min.).

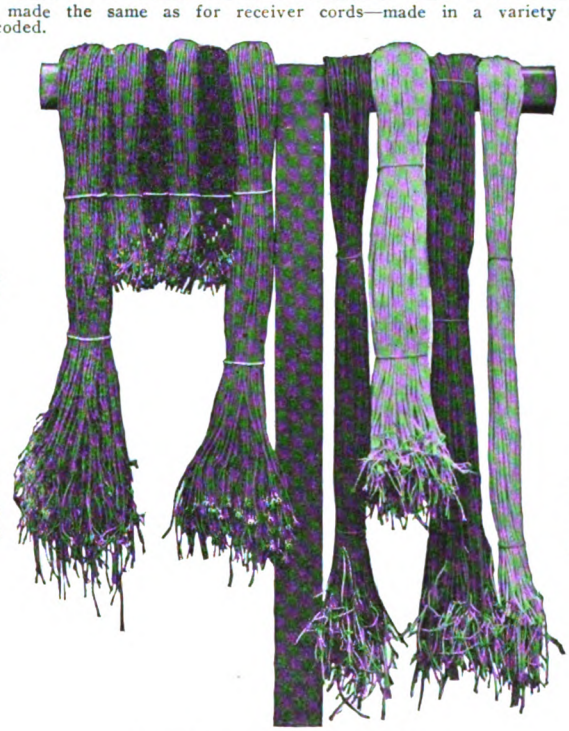
The *Worsted* and *Cotton* Receiver Cords are made with the different materials named as an external covering.

DESK TELEPHONE CORDS--Green Silk

The conductors are made the same as for receiver cords—made in a variety of combinations of conductors, each properly coded.

RECEIVER CORDS
(Two Conductor)

Furnished 30"-33"-36" lengths.



SWITCHBOARD CORDS
(Two and Three Conductors)

DESK TELEPHONE CORDS
(Any number conductors)

Furnished 6 ft. and 8 ft. lengths. Other lengths special orders.

TINSEL AND STEEL

Furnished 5 ft., 6 ft., 7 ft., 8 ft., 10 ft. lengths.

Specify length and type of plug.

SWITCHBOARD CORDS

Tinsel—The conductors of twenty-four (24) braided copper tinsel threads insulated with a braiding of *Tussah Silk* and a braided cotton serving are enclosed in a spring brass wire helix of proper diameter. Over these conductors protected by flexible helix is placed an external reinforced braiding of glazed cotton, or linen, as specified.

Steel—The conductors of round tinned steel wire and evenly formed around the core of the cord in opposite directions. Tussah Silk serving, braided cotton and braided linen insulation is placed between each wire. These cords are very strong, flexible and neatly finished.

WRITE NOW FOR LATEST PRICES AND SAMPLES
Booklet No. 114 "Cords" furnished upon application

STROMBERG-CARLSON TELEPHONE MFG. CO.

ROCHESTER, N.Y. CHICAGO, ILL.

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Good News—and It's All New

NEW COMPANIES.

PARKER, ARIZ.—Articles of incorporation have been filed by the Colorado River Telephone & Telegraph Company. Its principal place of business is to be at Parker, but other offices may be established within or outside of Arizona. The capital stock of the company is given at $100,000, divided into one thousand shares of one hundred dollars each, and the following directors have been elected: F. O. Richmond, O. McCormick and O. B. Roberts.

UNION MILLS, IND.—The Northern Indiana Telephone Company has been incorporated with a capital stock of $10,000, and the following directors named: Thomas E. Edminson, J. F. Underwood, J. R. Bailey. It is its intention to build an exchange in Union Mills, and extend lines throughout portions of Laporte, Porter, Starke and St. Joseph counties.

FOX LAKE. MINN.—The Fox Lake Telephone Company has been incorporated and work upon its lines commenced. Among those interested in the enterprise are A. Hanson, C. Sievert, J. Dwanons, C. Blanchar, E. Mahoney and others. Connections will be established with the Fairmont Telephone Company at Sherburn.

MOTLEY, MINN.—An Independent telephone company, to be known as the Motley Local Telephone Company, has been organized at this city, and the following officers and directors elected: V. Lockwood, president; G. D. Crossette, secretary; S. W. Jacobs, treasurer; directors, E. G. Haymaker, Alfred Wilson, C. E. Seely.

BUTTS, MO.—An Independent telephone company, whose intention is to construct a line from Butts to Steeleville, is being organized by the farmers of this city, and already quite a sum of money has been subscribed.

GENEVA, NEB.—The Farmers' Independent Telephone Company, with a capital stock of $100,000, has been organized, and the following officers elected: J. M. Ward, president; H. R. Deming, vice-president, and J. H. Morgan, secretary.

NORTON, N. D.—Articles of incorporation have been filed by the Norton Farmers' Telephone Company of this city. It has an authorized capital stock of $10,000, and the incorporators are Harry Fletcher, Carl L. Johnson, of Vesta township, and Anders J. Bylin, of Norton township.

BLANCHESTER, O.—The Farmers' Mutual Telephone Company has been organized in the vicinity of Butlerville (P. O. address Blanchester, O.), and the following officers and directors elected: E. H. Smith, president; Jesse Spurling, treasurer; Thomas Sharp, secretary; directors, E. H. Smith, Jesse Spurling, Thomas Sharp, Frank Carroll, E. D. Jones. The company's exchange is to be located at Butlerville, and lines built to Pleasant Plain, Rossburg, Level, Middleboro and Blanchester. The company has already secured about sixty subscribers.

WILKES-BARRE, PA.—The Conyngham Valley Telephone Company has filed articles of incorporation. It has a capital stock of $20,000, consisting of 800 shares at $25.00 each, and the following directors have been elected: Harry H. Swainbank and L. A. Dymond, of Wilkes-Barre, and A. F. Dymon, of Huntington Mills. The general offices of the company are located at Wilkes-Barre, and it will operate lines between East Butler township and Sheppton, Schuylkill county.

MALONE, TEXAS.—The Manning Telephone Company, which has an authorized capital stock of $15,000, has filed articles of incorporation. Among the incorporators are W. J. Manning, W. R. Alford, H. Henderson and others.

ACKERVILLE, WIS.—The Washington County Telephone Company, whose intention it is to construct lines between Ackerville and Lawrence, has been incorporated with a capital stock of $1,500.

BARABOO, WIS.—An Independent telephone company has been formed by the farmers in the vicinity of Skillet Creek. Among those actively interested in the new company are William Wickern, William Alwin, Wilbur Cowles, Albert Wickern and Charles Spencer.

NORTHFIELD, WIS.—Articles of incorporation have been filed by the Northfield Farmers' Telephone Company, of Northfield. It has an authorized capital stock of $7,000, and the incorporators are B. P. Lanning, Antone Ellingson and John Dettinger.

QUARRY, WIS.—The Quarry Riverside Telephone Company has been incorporated with a capital stock of $2,000, and among the incorporators are Ole Lotten, A. H. Alfrom, K. H. Thompson and others.

YELLOWLAKE, WIS.—The Yellow River Division of the Badger Farmers' Mutual Telephone Company has been organized, and work on the system will be commenced very soon. The following officers and directors have been named by the new company: M. F. French, president; Herb Magoon, vice-president; Chas. French, secretary; N. P. Ekblom, Frank Magoon, Gust Larson and O. H. Christianson.

ST. MARY'S, ONT., CAN.—Articles of incorporation have been filed by the St. Mary's-Medina Telephone Company, Ltd. The capital stock is placed at $40,000, and the principal offices are to be located at St. Mary's.

FRANCHISES.

WAYNE, N. Y.—The Wayne-Monroe Telephone Company has been granted a franchise to enter Naples.

ROCK HILL, S. C.—Application for a twenty-five year franchise has been made by the Rock Hill Telephone Company, whose intention it is to install a common battery system at this place.

SENECA, S. D.—The Seneca Telephone Exchange Company has been granted a franchise by the town board of Seneca, and work on the construction of its system will be commenced at once.

WITTENBERG, WIS.—Application for a telephone franchise has been made by John Eckhoff at this city.

EAST TORONTO, ONT., CAN.—The town council of this city has decided to grant a franchise to the Independent Telephone Company, which now operates in York, Markham, Scarboro, etc., and it will soon begin the installation of its system at this place.

FINANCIAL.

PLEASANT HILL, ILL.—The Farmers' Mutual Telephone Company has increased its capital stock from $2,500 to $22,000.

TOBINSPORT, IND.—The capital stock of the Tobinsport Telephone Company has been increased from $1,000 to $1,500.

GREENE, N. Y.—The Chenango-Broome Telephone Company has increased its capital stock from $700 to $1,100.

DAYTON, O.—The Home Telephone Company, of Dayton, has increased its capital stock from $1,200,000 to $2,000,000.

BLACK RIVER FALLS, WIS.—The capital stock of the Central Wisconsin Telephone Company has been increased from $50,000 to $100,000.

CAROLINE, WIS.—The Farmers' Independent Telephone Company has filed an amendment increasing its capital stock from $2,500 to $10,000.

BALDWIN, WIS.—The Rush River & Eau Galle Telephone Company has increased its capital stock from $3,520 to $12,000.

ELECTIONS.

NEZ PERCE, IDAHO.—The following compose the Board of Directors of the Nez Perce Co-Operative Telephone Company: H. H. Nuxoll, Cottonwood; P. W. Mitchell, Nez Perce; J. M. Magee, Mohler; O. W. Clark and Dr. J. Lenz, Ilo.

ENTERPRISE, KAS.—At the annual election of the Brownlow Telephone Company, held at this city recently, the following officers were elected: President, S. S. Peebler; secretary, W. H. Baker; treasurer, F. H. Comstock.

SLEEPY EYE, MINN.—The Local Rural Telephone Company has elected the following officers and directors: President, I. M. Olsen; vice-president, C. P. Cutting; secretary, Wm. Brust; treasurer, F. J. Riedl; directors, W. F. Kelm, Henry Dorhman, H. G. Hillesheim, Emil Rasmussen and W. G. Raverty.

CHARDON, O.—The following officers and directors have been elected by the Chardon Telephone Company: President, Orange Pomeroy; vice-president, Andrew Warner; secretary, W. C. Parsons; treasurer, S. S. Smith. Directors: Orange Pomeroy, F. S. Pomeroy, J. E. Ogden, E. R. Matthews, W. L. Sprague, Andrew Warner and W. C. Parsons.

MANTI, UTAH.—The Manti Telephone Company has elected the following directors: A. H. Sorenson, Stanley Crawford and Quince Crawford. It is a recently organized company and expects to build lines in the southern part of the state and in Sanpete county.

MISCELLANEOUS.

SULLIVAN, ILL.—Plans are being considered for the absorption of the Sullivan Telephone Company by the Mutual Telephone Company.

JACKSON, KY.—The telephone plant at this city has become the property of J. T. Pickets, of Mt. Sterling; Nicholas Hadden, J. D. Young, Jr., and others. Articles of incorporation have been filed and it is the intention of the new company to make many improvements and extensions in the system.

SILVER CREEK, NEB.—A half interest in the Silver Creek Telephone Company has been acquired by George Creeman.

DARRTOWN, O.—A reorganization has been effected of the Darrtown Telephone Company, and the following officers elected: President, W. Gilbert Thompson; vice president, treasurer and general manager,

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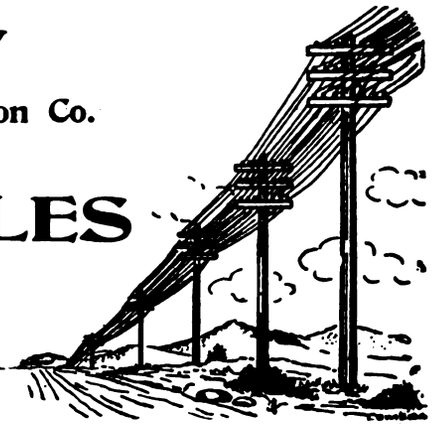

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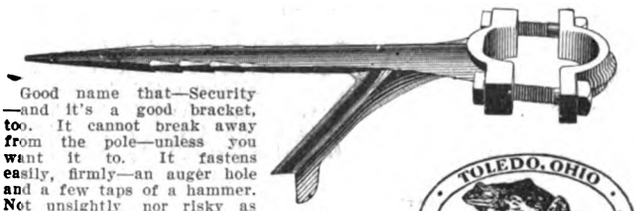

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MISCELLANEOUS.

L. A. Miller; secretary, John F. Mee; directors, S. H. Allen, of Oxford; E. M. Miller, of Darrtown; E. L. Miller, of Darrtown; W. G. Thompson, of Hamilton. It is the intention of the new company to install a modern, up-to-date plant at this city.

JACKSON, TENN.—The Jackson Home Telephone Company of Jackson was recently reorganized at Wyoming, and the following officers and directors elected: William Drury, president; Frank P. Hopper, vice-president; Richard E. Hutchins, secretary; James W. Allan, treasurer; directors, Robert T. Pettebone, Frank P. Hopper, William Drury, E. R. Pettebone, Guy W. Moore, Thomas Thomas, Charles E. Smith, R. S. Sprigins, W. D. Anderson, R. E. Hutchins and James W. Allan.

MOUNT HOLLY, VT.—The Mt. Holly Telephone Company has been reorganized and the following officers elected: President, B. E. Horton; vice president, I. L. Hill; secretary, Howland Marshall; assistant secretary, E. S. Burton; treasurer, J. D. S. Packer; directors, A. E. Hammond, W. H. White and Fred White. The new company expects to extend its system to Tarbellville and East Wallingford.

WITTENBERG, WIS.—The Wittenberg Independent Telephone Exchange has become the property of J. F. Eckhoff & Son, who will build new toll lines.

COMBINATIONS.

DES MOINES, IA.—A merger has been effected between the Des Moines Mutual Telephone Company and the following companies: The Hawkeye Telephone Company, Perry; the Boone Telephone Company, Boone; the Jasper Telephone Company, Colfax; the Iowa Southern Telephone Company, Des Moines; the Knoxville Electric Company, Knoxville. An amendment to its articles of agreement has been filed by the Des Moines Mutual Telephone Company increasing its capital stock from $450,000 to $1,600,000.

WATERLOO, IA.—The Farmers' Mutual Telephone Company of New Hartford is to be absorbed by the Corn Belt Telephone Company. The Farmers' company operates about 145 miles of line, including exchanges at New Hartford, Parkersburg, Dike and other places.

MARTINSVILLE, MO.—Connections are to be formed between the Harrison County Mutual Telephone Company's exchanges at Martinsville, Brooklyn, New Hampton, Eagleville, Washington Center, Ridgeway and Denver, Mo., and the Farmer's Mutual Telephone Company's exchanges at Bethany, Melbourne, Modena, Coffeysburg, Mt. Moriah, Matkins, Gilman and Spickardsville.

WASHINGTON, PA.—A charter covering the consolidation of the Carmichaels and other Independent lines in Greene county has been granted to the Greene County Telephone Company.

BLUEFIELD, WEST VA.—The Tazewell Telephone Exchange and all the lines in Tazewell county have become the property of the Bluefield Telephone Co. The newly acquired property will give the Bluefield company connections with all the important points in Tazewell county, and lines running as far west as Raven.

PERSONAL.

E. GRAHAM, who has been manager of the Citizens' Telephone Co., Paris, Tex., during the past year, has accepted a position as general superintendent of the Texarkana Co. at Texarkana. Mr. Graham is a hustler of known ability, and will do much to keep things at Texarkana on the move in the right direction.

HARRY HANFORD succeeds Mr. Halsey as manager of the Philippine Islands Telephone & Telegraph Co. at Manila, P. I. Mr. Hanford has been associated for the past six years with the firm of Castle Brothers, Wolf & Sons, of Manila.

B. C. KETRING has succeeded H. R. Miller as manager of the American Union Telephone Co. in Altoona, Pa., and has assumed his duties at that that point. Mr. Ketring formerly had charge of the company's business at Phillipsburg.

With the Builders

WOODLAND, CAL.—The Farmers' Telephone Company, which operates lines between Madison, Yolo, Black's, Tule and Henle, contemplates the erection of a line from Knights Landing to Woodland.

COEUR D'ALENE, IDAHO.—The Interstate Telephone Company, which has just completed the installation of its system at this city, with a capacity of five hundred lines, expects to increase its plant very materially.

NEZ PERCE, IDAHO.—It is the intention of the Nez Perce Co-Operative Telephone Company to improve its system at this city, and to install new telephones in Lewiston. Lines from Dublin to Lawyer's Canyon, and from Ilo to Nez Perce are also to be constructed.

MADISON, IND.—Many extensions are to be made in the plant of the Madison Telephone Company, and much new equipment installed.

EARLHAM, IOWA.—Toll lines from Earlham to Adel, Redfield and Winterset are being constructed by the Adams Township Telephone Company.

MERRILL, IOWA.—The Farmers Mutual Telephone Company is extending its lines and otherwise improving its system.

THAYER, KAS.—The Thayer Telephone Company is constructing a line from Thayer to Earlton.

SKOWHEGAN, ME.—It is the intention of the Maine Telephone Company to expend $20,000 in improving its plant. A new switchboard is to be installed, and its lines entirely rebuilt.

ELMIRA, MICH.—It is the intention of the Home Telephone Company to extend its system to connect with the Gaylord system.

LAKE ANN, MICH.—Work on the construction of its system has been commenced by the Lake Ann & Oviatt Telephone Company. The line will eventually reach Maple City.

NORBORNE, MO.—The Stet-Rockingham & Norborne Telephone Company is to commence the erection of its exchange building.

REDWOOD FALLS, MINN.—A number of new rural lines are to be built by the Rural Telephone Company of this city.

JACKSON, MISS.—The Home Telephone Company, which was recently granted a franchise at this city, is to commence the construction of its system.

ANACONDA, MONTANA.—The Independent Telephone Company has commenced the construction of its system.

SPALDING, NEB.—The Independent Telephone Company is at work on the installation of its exchange in this city, and it also expects to build lines into the surrounding country.

TONOPAH, NEV.—Work is soon to commence on the new line which the Tonopah & Ely Telephone & Telegraph Company is to build. It will extend from Tonopah through Bellehelen, Golden Arrow, Hot Creek, Reveille, Duckwater and on to Ely.

EAST SPRINGFIELD, N. Y.—The East Springfield Telephone Company, which has just completed a line to Pleasant Brook, is building a line to Sharon Springs.

WESTFIELD, N. Y.—It is the intention of the Westfield Telephone Company to expend $10,000 in the installation of an up-to-date exchange in this city.

YOUNGSTOWN, O.—New lines are being built by the Youngstown Telephone Company.

GARDINER, ORE.—A new line between Gardiner and Sulphur Springs is to be erected by the Coos Bay & Umoqua Telephone Company.

AMBLER, PA.—The Keystone Telephone Company expects to extend its lines from Ambler to Doylestown, taking in Penllyn, Gwynedd, North Wales, Lansdale and other towns.

MEADVILLE, PA.—A new line is being built in eastern Cussewago, which will give communication to the farmers in Crawford county. The line is to be about ten miles in length, and will be made part of the Saegertown exchange. A new line is also being erected to the south of Conneaut Lake, which will connect Meadville, Conneaut Lake, Geneva and other places in the county.

LITTLE RIVER, S. C.—An Independent telephone line is to be constructed from Little River, S. C., to Southport, N. C. Among those interested in the new enterprise are B. O. Stone, of Wilmington, N. C., and others.

FREDERICK, S. D.—A local exchange is to be installed at Frederick by the Groton-Ferney Telephone Company.

LYNNVILLE, TENN.—A new toll exchange is to be established at this city by the Home Telephone Company.

CASTLEDALE, UTAH.—A local telephone system is being installed at Castledale by the Eastern Utah Telephone Company. Those having charge of the work are O. J. Harmon, of Price, and N. C. Christensen, of Cleveland.

CABOT, VT.—Many improvements are being made in the plant of the Molly Falls Telephone Company.

EAST WALLINGFORD, VT.—It is the intention of the Rutland County Telephone Company to build lines to connect with the Mount Holly Telephone Company at East Wallingford.

LEWISBURG, VA.—Work on the plant of the newly organized Limestone Telephone Company is to commence at once.

HOQUIAM, WASH.—The new Independent telephone company, which was granted a franchise at this place several months ago to compete with the Sunset (Bell) Telephone Company, has commenced the construction of its plant.

ATHENS, WIS.—It is the intention of the Athens Telephone Company to expend about $5,000 in improving and extending its system. Lines are to built east and west of Athens, extending to Halsey, Johnson, Hamburg and other places.

BANGOR, WIS.—About $3,000 is to be spent by the Bangor Telephone Company in improving its system.

LA CROSSE, WIS.—Lines are being built by the La Crosse Telephone Company from La Crosse to West Salem.

UNDERGROUND.

WASHINGTON, PA.—The State Mutual Telephone & Telegraph Company has been granted permission to construct a conduit system in this city.

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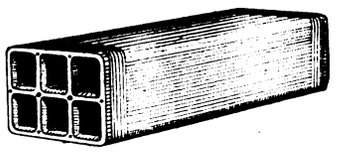
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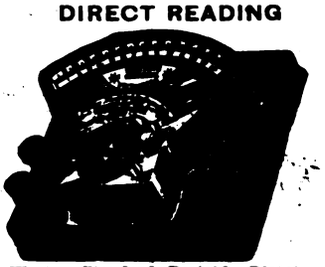
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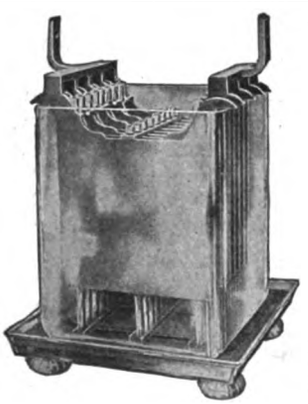

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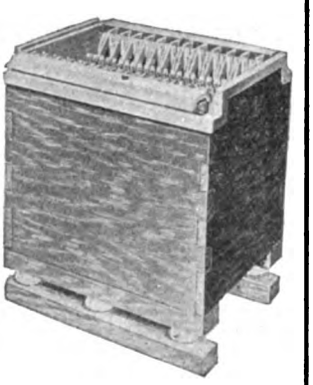

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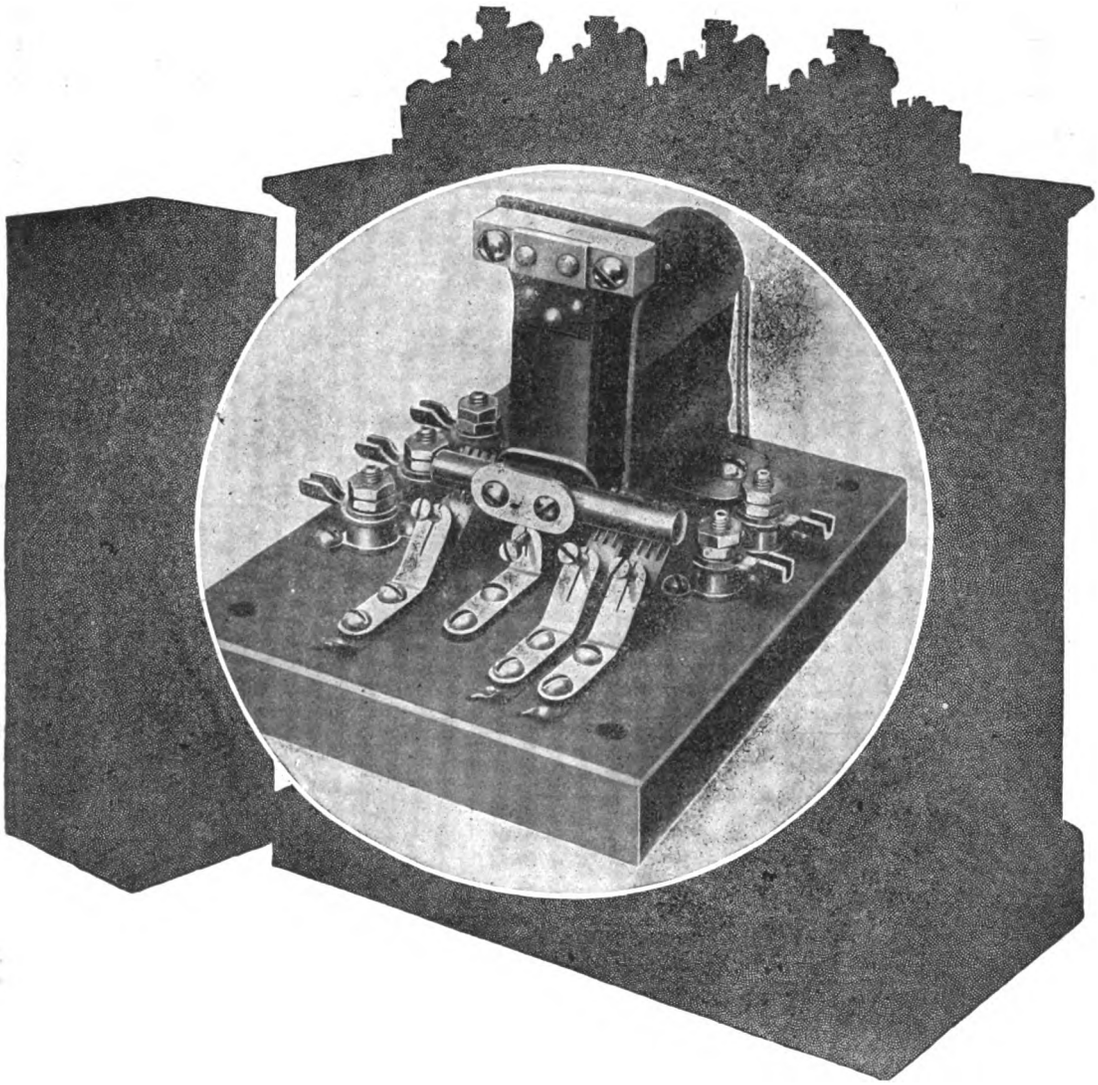

This Primary Circuit Closing Relay in our Harmonic Converter is for closing the circuits of the transformer primaries of the Dean Harmonic Converter, and is especially designed for small exchanges where dry cells are used for the ringing current. A minimum current consumption is imperative for party line selective signaling in the small exchange. This relay, operated by a circuit extending to special contacts on the ringing key at the switchboard, is entirely automatic, not in any way depending on the operator for its prompt and accurate action. It actually starts the selective vibrator and consumes absolutely no current except during the period that the operator is ringing the subscriber. Our folder No. 5 should be in your possession if you wish to have your selective ringing knowledge complete.

FACTORY AND GENERAL OFFICE, ELYRIA, OHIO
BRANCH OFFICE, Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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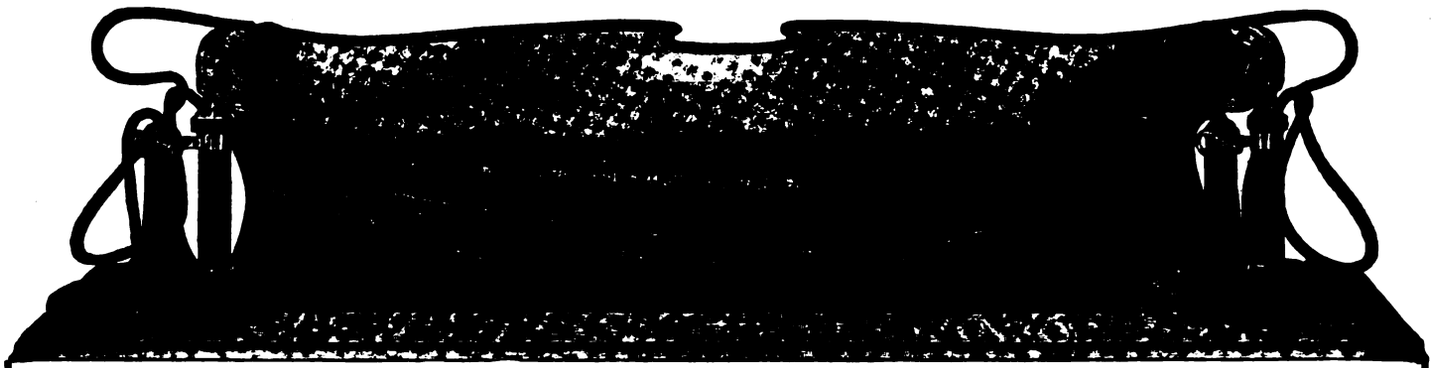

No. 849
Central Energy Desk Telephone

The "Stromberg-Carlson" Standard Portable Desk Telephone with the unique addition of the induction coil in the base and two-conductor cord. All talking apparatus in the desk stand itself which provides a desk telephone that may be used without an extension bell—the latter serving as a call bell only.

No. 7-A Transmitter.
No. 6-A Receiver with
No. 7-33" Cord attached.

A metal or wooden extension bell will be furnished if one is required.

CODE NUMBERS:

No. 849 Desk Telephone only.

No. 873—No. 849 Desk Telephone with No. 872 Metal Extension Bell.

No. 851—No. 849 Desk Telephone with No. 850 G. O. Extension Bell.

We furnish this style of portable instrument wired and equipped for any kind of service.
For further description, circuits and prices ask for Pamphlet No. 2.

WRITE EITHER OFFICE TO-DAY.

"Central Energy"

Stromberg-Carlson Telephone Mfg. Co.
Rochester, N.Y. · · · Chicago, Ill.

"Central Energy"

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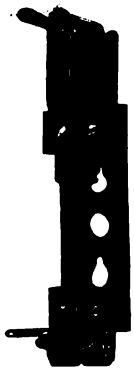
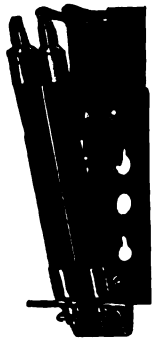
UNIT TYPE MOUNTED LINE FUSE





Mounting Plate is made up of pressed steel on which is mounted the German silver springs insulated by hard rubber blocks.

Protection is made up in units of one pair each, equipped with fuses and carbons or fuses only.

The Fuses are of the snap in type, easy to take out, made 1, 2½ or 5 Amperes.

The units are held on frame or strip by two screws making it easy to replace or change location.

Sterling "GOOD GOODS"

No. 263

Equip your pole houses with the mounting strips and put on the protectors as required

STERLING ELECTRIC CO.
La Fayette, Ind.

AN EASY WINNER

YES, our Famous "1900" Dry Battery "Leads them All" for

STRENGTH
ENDURANCE
and EFFICIENCY

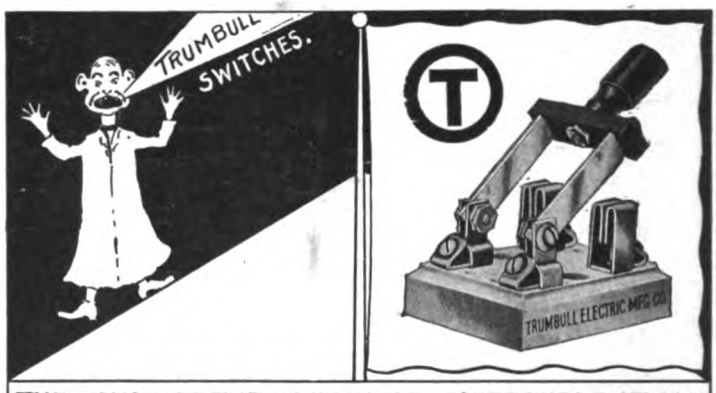
Prove our claim. GET our Batteries, then you'll know the positive truth of every statement.

There's an advantage in buying early—
—don't wait—order to-day—NOW.

THE NUNGESSER ELECTRIC BATTERY CO.

General Sales Office:

128 West Jackson Blvd., CHICAGO, ILL.



THE HOUSE OF THE SWITCH OF NO TROUBLE AT ALL

CLIPS SELF ADJUSTING.

RESSESES IN BASES HOLD THE CLIPS.

TRUMBULL TELEPHONE SWITCHES

WRITE FOR CATALOG

THE TRUMBULL ELECTRIC MFG. CO. PLAINVILLE, CONN.

TRUMBULL SWITCHES YIP!

SO GOOD LOTS OF PEOPLE COPY THEM.

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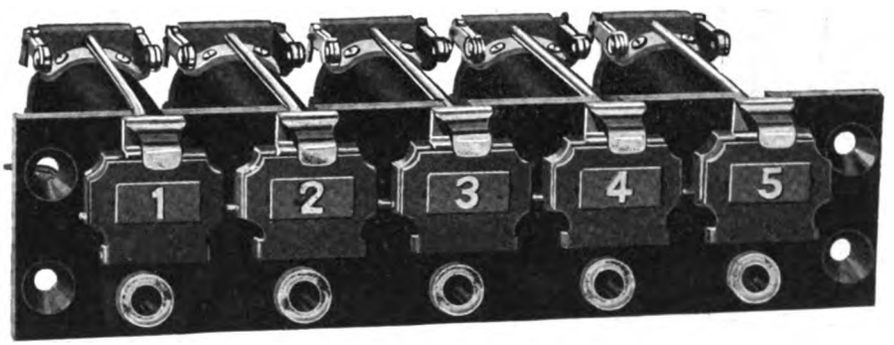
CENTURY
100% GOOD

One of Our Specialties
4-PARTY SELECTIVE RINGING
MAGNETO AND COMMON BATTERY

Write us for description and prices

We manufacture the most complete line of telephone apparatus in the world



OUR SELF RESTORING DROP WITH REMOVABLE COIL FEATURE EXTREMELY SIMPLE AND RELIABLE

CENTURY TELEPHONE CONSTRUCTION CO.
BUFFALO, N. Y., U. S. A.

TORONTO BUFFALO KANSAS CITY

Please mention THE AMERICAN TELEPHONE JOURNAL when writing to ADVERTISERS.

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All Kellogg Telephone Parts

Are Made From the Best Grades of Material and Are Carefully Assembled by Skilled Workmen, Thus Making Everything High-Grade Throughout

Kellogg Portable Desk Telephone,
For Central Battery or Magneto Use.

The tubular hard-rubber covered standard, with hollow brass shell, nickel plated base, is distinctively KELLOGG.

The transmitter hinges at top of standard, and there is mounted in base the hook switch and hard-rubber terminal block for receiver and desk stand cords.

The hook switch is of the toggle joint type, having a long motion of the springs, thus obtaining most excellent contacts with only a minimum motion of hook.

All necessary parts are properly insulated, are easy of access and everything is made as nearly dust proof as possible.

THIS IS WHY

The Standard of Excellence Is Always Maintained By Kellogg Apparatus

Correspondence Solicited **Prices Furnished Promptly**

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WINNIPEG, MANITOBA, CAN.
404 Ashdown Block

KELLOGG SWITCHBOARD AND SUPPLY CO.

CHICAGO, ILLINOIS, U. S. A.

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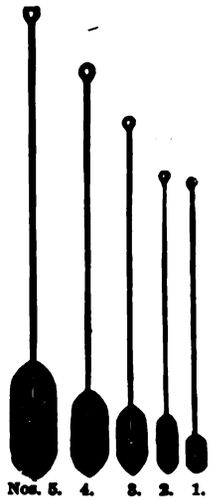

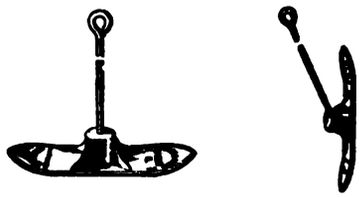

Hercules Anchor

(PATENTED)

The Iron Dead Man

Made in five sizes, from that for 20-foot pole to large one for extremely heavy strains, wrecking trains, etc.

They are the best anchor in every way for holding up heavy leads and round corners. Easy to set, pull against solid earth and will not creep.

As they are made of Malleable Iron, they are practically indestructible. All anchor plates guaranteed.

Send for descriptive circulars and prices.

Manufactured by

THE W. G. NAGEL ELECTRIC CO.

26-30 ST. CLAIR ST., TOLEDO, O.

SIMPLICITY

Note how easy it is to splice pairs when you use HARGIS CABLE SPLICING JOINTS. Note how easy it is to get into the joint in case you have to test out for trouble.

If you are stringing several lengths of cable and a storm blows up, you can get your cable ends into a moisture-proof HARGIS JOINT in no time and thus prevent moisture from getting into your cables. When the weather clears up, your lineman can go out and splice the pairs in each joint.

While an expert cable splicer is rigging up his platform, etc., to start to work on a horizontal joint, a lineman can wipe in a HARGIS JOINT. The lineman can have all his pairs spliced and be off to the next job about the time the expert splicer would be ready to begin wiping the second end of his horizontal joint.

Making a splice with a HARGIS JOINT is so easy that you don't need a cable platform. There is no need for a drip pan to catch the paraffine, because the HARGIS JOINT is submerged in the paraffine pot, and there is no waste. The moisture has to go out. No uncertainty.

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W. N. Matthews & Brother

Manufacturers of Patented Money Saving Specialties.

214 North Second Street **ST. LOUIS**

Branches: New York and San Francisco.

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[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE

United States Coin Register Co.

TOLEDO, OHIO

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Years of development and experience have shown that the telephone subscribers demand a pay station from which all points of uncertainty have been eliminated

THE LIVERMORE
One-Slot Pay Station

fills these requisites completely.

There is absolutely nothing for the subscriber to do but drop the coin. Any coin the operator specifies is dropped in the ONE SLOT where it automatically chooses the correct path and registers its individual signal.

The signals are mounted, together with the transmitter, on a bell resonator, which is insulated from the box and the coin chutes.

The operator thus receives the clear, easily distinguishable signal only and none of the rattling or outside pounding.

The Livermore Pay Station has only One Slot. There are no Levers, no Air Pumps, no Springs, no Knives, no Clock Work, no Push Buttons

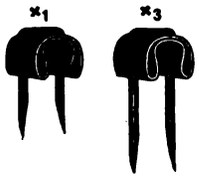
NO TROUBLE IN THE LIVERMORE ONE-SLOT PAY STATION

GET YOUR ORDERS IN EARLY

Livermore Pay Station Co. : 4 Bowker St., Boston, Mass.

Installing Many Instruments?

Yes! How about your wiring? Putting it up in the most approved and economical manner? In other words, are you using Blake Insulated Staples? Cheaper than cleats, save time in installing and make a very neat appearance. Have good driving qualities, too.



Samples and prices Postpaid for the asking.

Soldering Switchboard Connections

Can be accomplished quicker, better, cheaper and with no danger of damage to insulation by the use of

Blake Tube Flux

The exact amount required just where it is needed. No waste, no dirt.

Sample Tube, Postpaid, 20c.

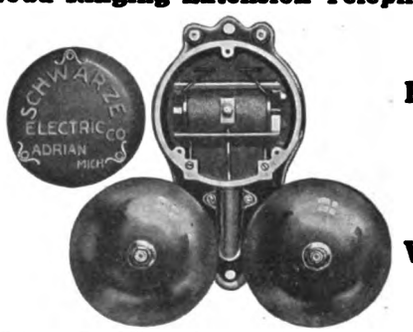
GET ONE TO-DAY

BLAKE SIGNAL AND MFG. CO.

246 Summer Street, BOSTON, MASS.

Magneto Loud Ringing Extension Telephone Bells

Gongs 6-inch to 10-inch



All Resistances — All Weatherproof

Efficiency, Durability and Price will interest you.

Schwarze Electric Co., Main Office & Factory, Adrian, Mich.

Branches { Chicago, 324 Dearborn St. St. Louis, Mo., 706 Victoria Bldg. Pittsburg, Renshaw Bldg. San Francisco, 908 Atlas Bldg.

CABLE REEL WHEELS

Anything in the way of pole line hardware for telephone and telegraph construction material.

HALLETT IRON WORKS

92-96 West Polk Street CHICAGO, ILL.

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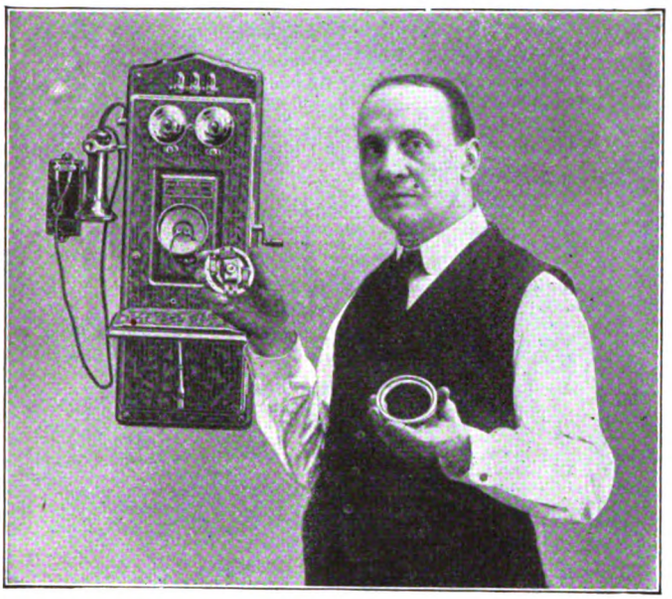

No Trick at All.

Talks With the Trouble Man

Did you ever take the little screws out of the case of your transmitter and have them drop on the floor, then spend an hour trying to find them and finally give it up in disgust? This never happens with the ANDRAE TRANSMITTER. There are no screws in the case. It is clamped together by a large threaded ring, easily removed and yet firm and positive in its grip. Our transmitter never gets loose or vibrates and its mechanical construction is the best yet produced.

When it comes to talking, this transmitter can't be beat. There is no rattle or jar to it, but just a clear, positive reproduction of the voice. It is made up of imported French carbon granules that never pack.

One of the best illustrations of the workmanship in this transmitter is the fact that it has now been on the market for six (6) years, backed by an unlimited guarantee and the number replaced has not been worth mentioning.

It is like all the rest of the Special Heavy GIANT Bridging Telephone. It is built for business and the harder you work it the better it works. You may try them at our expense.

CONDENSERS

We have been shipping condensers to London and Honolulu since I talked to you last month. This shows that their popularity is spreading in all directions.

Whenever you hear complaints that the bells ring only part of the time, you can make up your mind that the line needs condensers. They will cure this trouble every time. They are so inexpensive and so practical that it is no wonder up-to-date Telephone Systems are adopting them everywhere.

IF YOU HAVE RINGING TROUBLES, TRY CONDENSERS

Don't waste time and money repairing ringers. Don't put it off. DO IT NOW.
You can have one line completely equipped on trial and return them at the end of 30 days at our expense.
WRITE US ABOUT IT TO-DAY!

JULIUS ANDRAE & SONS CO., **Write for Cat. No. 11 and No. 24**
99 W. WATER STREET
MILWAUKEE

"It might interest you

to know that the total maintenance expense of parts for our entire plant of 3,000 switches for the past eighteen months has been $10.24," writes Supt. J. A. Duncan, of the Sioux City Telephone Company, Sioux City, Iowa. (This company operates our AUTOMATIC TELEPHONE SYSTEM.)

"A like sum

would perhaps take care of the repair cost on operators' chairs in a manual exchange of the same size," adds Mr. Duncan. (We'll be glad to send you a copy of his letter if you'd like to see it.)

It occurs to us

that the one item of switchboard cords alone for a manual exchange of 3,000 lines would amount to at least $150 in eighteen months. That is fifteen times the cost of all repair parts on the Sioux City automatic exchange.

That is only one

of the many economies of the AUTOMATIC SYSTEM. These economies all help to swell the profits. And—the AUTOMATIC, being the best service, commands the highest rates. Low production cost plus high selling price equals big dividends. That is what led to the adoption of the AUTOMATIC TELEPHONE SYSTEM in the following cities:

Aberdeen, S. D.
Akron, Ohio.
Allentown, Pa.
Auburn, Me.
Auburn, N. Y.
Battle Creek, Mich.
Beaver Falls, Pa.
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Wilmington, Del.
Woodstock, N. B., Can.

AUTOMATIC ELECTRIC COMPANY

VAN BUREN AND MORGAN STS. **CHICAGO, U. S. A.**

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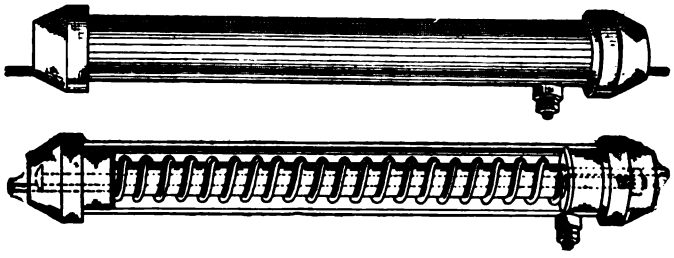
FROM THE SKY

TO THE

SKY ROCKET ARRESTER

The Flash of Lightning Goes



Always Sure, Safe and Simple

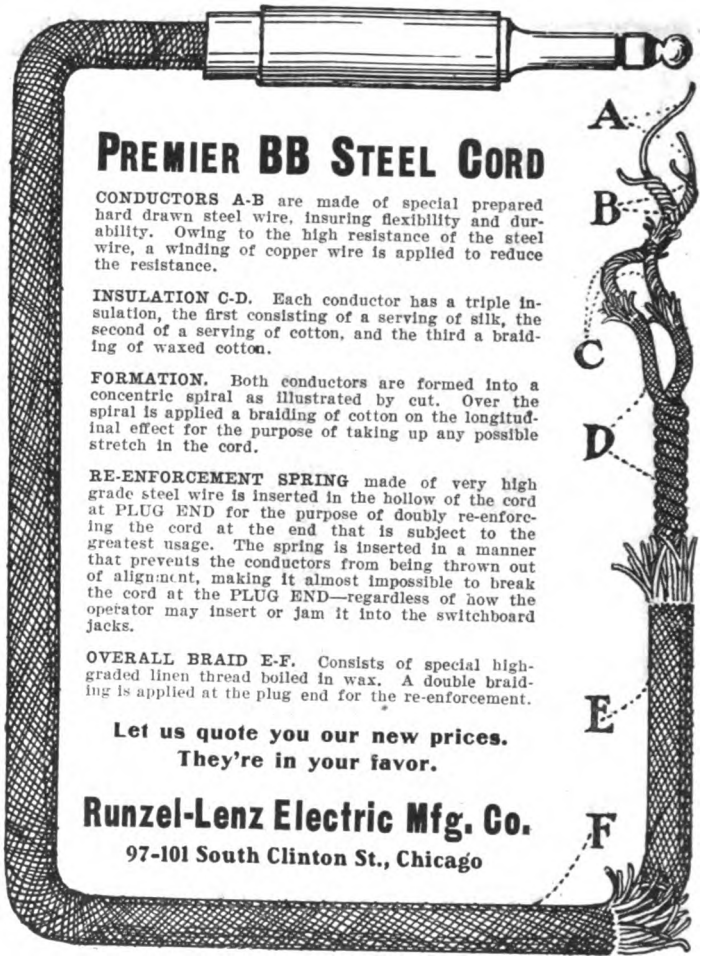
The coiled conductor within the grounded cylinder presents a continuous discharge surface of fifty inches. Lightning will not follow such a succession of coils owing to the opposing electromotive force or resistance set up.

Thus it will discharge to ground and does not reach the instrument or switchboard drop.

Will save their cost many times in a year.

WRITE FOR A SAMPLE TO-DAY. IT WILL PAY YOU.

CHANCE MANUFACTURING CO.
CENTRALIA, MO.



PREMIER BB STEEL CORD

CONDUCTORS A-B are made of special prepared hard drawn steel wire, insuring flexibility and durability. Owing to the high resistance of the steel wire, a winding of copper wire is applied to reduce the resistance.

INSULATION C-D. Each conductor has a triple insulation, the first consisting of a serving of silk, the second of a serving of cotton, and the third a braiding of waxed cotton.

FORMATION. Both conductors are formed into a concentric spiral as illustrated by cut. Over the spiral is applied a braiding of cotton on the longitudinal effect for the purpose of taking up any possible stretch in the cord.

RE-ENFORCEMENT SPRING made of very high grade steel wire is inserted in the hollow of the cord at PLUG END for the purpose of doubly re-enforcing the cord at the end that is subject to the greatest usage. The spring is inserted in a manner that prevents the conductors from being thrown out of alignment, making it almost impossible to break the cord at the PLUG END—regardless of how the operator may insert or jam it into the switchboard jacks.

OVERALL BRAID E-F. Consists of special high-graded linen thread boiled in wax. A double braiding is applied at the plug end for the re-enforcement.

Let us quote you our new prices.
They're in your favor.

Runzel-Lenz Electric Mfg. Co.
97-101 South Clinton St., Chicago

Overtime Losses Eliminated

By the old "clock and pencil" method of timing toll messages, the operator is usually prone to favor the patron by checking the call at the minimum time allowance, entirely neglecting "excess time." This is particularly true in cases where she knows the patron; thus showing an unfair discrimination between patrons, that in the course of a year results in large losses to the telephone company.

CALCULAGRAPH

Records being made automatically in a purely mechanical manner, register every second of the call and thus assure the fullest returns from toll lines.

It makes no clerical errors.
Get our booklets for further reasons.
Write to-day.

CALCULAGRAPH COMPANY
1437 JEWELERS' BUILDING, NEW YORK CITY
Agents for Canada: Northern Electric and Manufacturing Co., Ltd., Montreal.

EATS 'EM ALIVE.

No mollycoddle about the ***Chapman Lightning Arrester*** for Telephone and Telegraph Lines. Explanatory booklet sent free.

H. E. Cobb, Selling Agent,
1501 Monadnock Bldg., Chicago, Ill.

Manufactured by MINNESOTA ELECTRIC CO.,
Minneapolis, Minnesota.

BELDEN MANUFACTURING CO.

MAGNET WIRE TELEPHONE CORDAGE
SWITCHBOARD, JUMPER and ANNUNCIATOR WIRE
ROSIN-CORE SOLDER COTTON SLEEVING
BARE and TINNED COPPER WIRE
GERMAN SILVER WIRE
WINDING MACHINES and REVOLUTION COUNTERS

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194 MICHIGAN STREET - - CHICAGO

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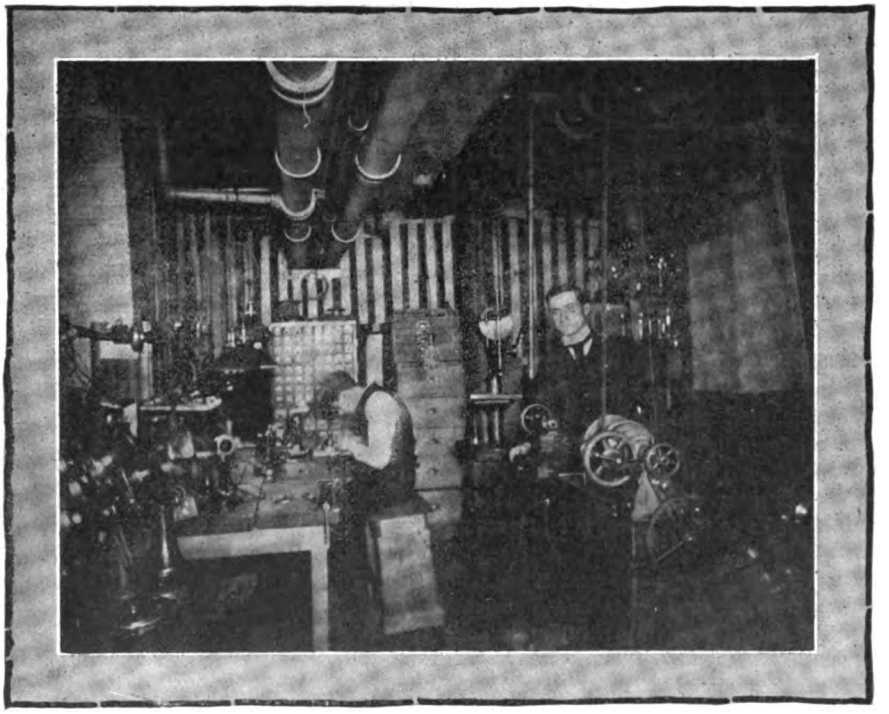
VOLUME XV. SATURDAY, JUNE 15, 1907. NUMBER 24.

Managing a Telephone Company's Supply Department*

By M. R. Tracy, Storekeeper for the Toledo Home Tel. Co., Toledo, O.

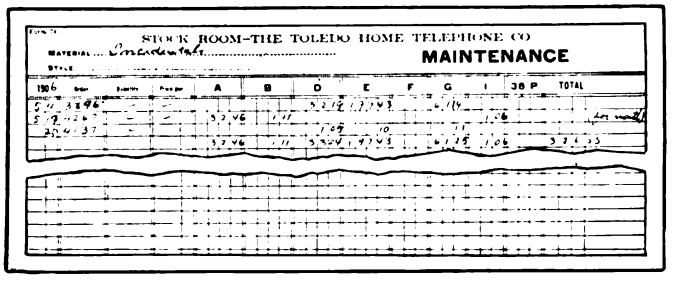
LET us start a cable splicer out with a set of tools; everything from a cable saw to a covered cart with a lock on the cover and a chain to lock it to a pole at night. The splicer decides what articles he needs, and then he signs a stock order for the tools, naming every one. A duplicate of such an order is reproduced in Fig. 10, on the following page. The tools are taken from stock, or purchased if necessary, and delivered to the man on this order. On the fifteenth of each month he files a list of his "belongings" with the storekeeper, using the form shown in Fig. 11. This report gives all necessary data for completely accounting for all of the company's property, so that any discrepancy between reports can very readily be traced out. It fixes the responsibility definitely, so that there can be no question as to the amount of material each man should have. In order to see that this report covers all the new material issued during the month, each man's orders for tools are kept in a file, the names of the men being kept alphabetically. When he files his monthly statement it is compared with the stock orders he signed for tools during the month, and if the statement is found correct the stock orders are destroyed. If not correct, the man has to make it right. Broken tools are replaced with new ones if the pieces are turned in.

This system seems to admirably satisfy the requirements of the storekeeper, whose first object is to account for all material which the company owns. It is not hard to see how it has a tendency to do more than this, however. If one recalls the frequency with which tools get misplaced under the ordinary plan, which does not involve any particular strictness in accounting once they are in a man's possession, he will grasp the point. Where men are working together the company's tools are altogether too often treated as common property, which anyone may use, but for which no one is responsible. Borrowing is common enough, but there is no particular reason for returning an article as soon as the user has finished with it. The result is that tools often become separated from the original holder, through repeated borrowing, and if finally lost it is worse than useless to attempt to trace their career or charge their cost to any particular person. The simple plan of using the two forms referred to, and insisting upon their being properly filled out, does away with all annoyance and risk of loss by



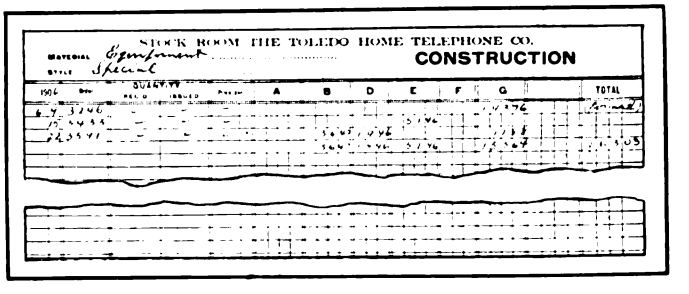
The Repair Shop at Toledo—A Division of the Storekeeper's Department, where Old Apparatus Is Given a New Lease of Life.

*Continued from the issue of June 1st.



STOCK ROOM—THE TOLEDO HOME TELEPHONE CO.
MAINTENANCE

Fig. 13. "Incidental" card, for charging off miscellaneous small items, as explained on the following page.



STOCK ROOM THE TOLEDO HOME TELEPHONE CO.
CONSTRUCTION

Fig. 14. Card for special equipment, showing date, number of purchasing order and distribution. See next page.

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making each man personally responsible for what he draws, and providing a means of tracing the goods of which he is the custodian.

STOCK ORDER

The Toledo Home Telephone Co.

TO STOREKEEPER: Furnish bearer with the following supplies.

Quantity	ARTICLES WANTED
1	gasoline furnace
1	1 qt. blow torch
1	cable saw
1	metal pot
1	paraffine pot
1	" hood
1	" pan
1	" dipper
1	ladle
1	canvas
1	cart
3	padlocks #K114

Date June 11 1906

C. Splicer FOREMAN

Fig. 10. Stock order for outfit of tools to be furnished to cable splicer by company.

It is well known to every telephone man that the storekeeper's department has to carry a supply of very small articles for repairing delicate parts of telephones, switchboards and private branch exchanges. These range in price from one-tenth of a cent up, and in size anywhere down to that of the head of a pin. The small cabinet described in the first number of this article furnishes a convenient place to keep them, but to account for them is another matter.

They are known to each repair man by a different name, and used so infrequently that the storekeeper forgets this time what name he gave them last time, and is receiving them under one name and issuing them under another name. He becomes confused in the price and lost in the count. He cannot even depend upon the original invoice for standard names, because they are billed by factory number, as "piece, No. 1586." Just to show what has to be done along this line the writer furnishes in Fig. 12 a copy of a regular invoice of small material. In Fig. 15 are shown the several classes of articles mentioned in the invoice. Now let the reader go ahead and try to identify the pieces in the cut with the articles named in the invoice.

Form No. 35.

THE TOLEDO HOME TELEPHONE CO.

Tool Account of _____ for _____ 190

NAME OF TOOL	ON HAND TO-DAY	RECEIVED SINCE LAST REPORT	TRANSFERRED AND TO WHOM: NO.	NAME OF PERSON RECEIVING
gasoline furnace	1	–	–	
cable saw	1	1	1	O. C. Jones

NOTE.—When Tools are Transferred, you must have the Signature of the Party Receiving them (in the Column for Signature of "Person Receiving") or you will get no Credit.

File This Report the last of each Month with the Storekeeper.

E. L. CLINE, MANAGER.

Fig. 11. Head and foot of form for list of tools, to be made out to date and filed each month.

These are some of the puzzles confronting the storekeeper, and they cannot be neglected if he expects to balance his account with the auditor. The invoice of which a part is shown here covered several pages, and amounts to over $250. It is charged to the warehouse, and the warehouse must get credit for the goods, or be short.

The writer likes an "Incidental" card (Fig. 13). When he "O. K.'s" this invoice he at once charges the amount of the invoice to its appropriate account, according as it is found upon inspection that certain items were bought to repair switchboard

——— TELEPHONE MANUFACTURING COMPANY.

Electrical Construction Materials and Supplies.

Quantity.		Description.	Price.	Amounts Totals.
50	Pc. No. 990	Bushings	$.01½	$ .75
50	Pc. No. 1163	"	.02½	1.25
100	Pc. No. 1819	Rollers	.05	5.00
300	Pc. No. 1097	Bushings	.00½	1.50
200	Pc. No. 1096	"	.01	2.00
200	Pc. No. 1601	Hard Rubber Strips	.00½	1.00
50	Pc. No. 1831	Washers	.01½	.75
50	No. 8	Binding Posts	.07	3.50
200	Pc. No. 1626	Thumb Screws	.03	6.00

Fig. 12. Invoice of small articles needed for repairs of telephones, switchboards, etc.

apparatus, telephones or private branch exchange parts, etc. When one has the invoice and material right before him he can easily distribute the accounts. Now, these are in the warehouse, but are no longer charged to the warehouse account, and are not to appear in the warehouse inventory. They are carried as an accommodation to the superintendent of the department where they are to be used.

Then another line of accounts that is difficult to handle is "Special Equipment." It is frequently necessary to buy some

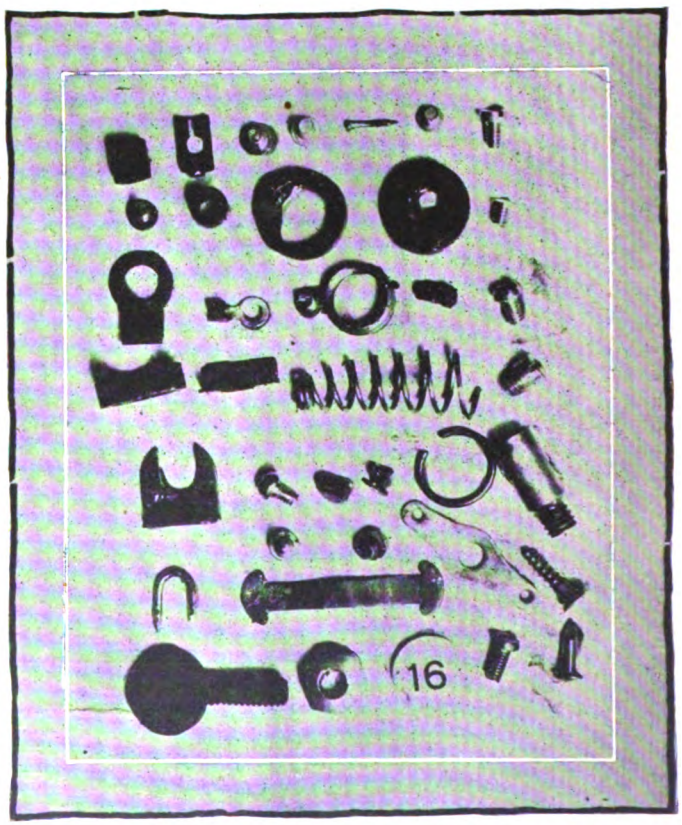

Fig. 15. Reproduction of a photograph of small telephone material—very nearly exact size of articles.

particular apparatus for a piece of unusual work. Sometimes it is special material for an inter-communicating system, or for

(Continued on page 404.)

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Making History in the Northwest*

By Francis Dagger.

LAST year with that generosity and spirit of fraternity which characterizes the American nation, you made a new record by amending the title of your association in order that Canadians might be included in its membership. This year you have rendered the occasion conspicuous by including in your programme for the first time an address dealing with events beyond the limits of your great Republic and in the vast Dominion to the north of you.

In order that you may the better understand that great territory which has for the past year been attracting so much attention in the telephone world and the most important part of which has recently formed the arena of one of the greatest contests between the "Bell" monopoly and the people, I propose giving you a few figures which indicate its great financial and commercial development.

In Manitoba, the premier province of this great northwest, last year sixty-one and a quarter million bushels of wheat was produced on three and a quarter million acres of land, by forty-five thousand prosperous farmers. The province has still twenty million acres of virgin prairie open for settlement, capable of producing four hundred million bushels of wheat per annum.

During the last five years the fifteen largest towns which lie between Lake Superior and the Rocky Mountains have increased in population 139 per cent, twenty-six towns of from 1,000 to 3,000 inhabitants have increased 96 per cent, and twenty-nine towns of from 450 to 1,000 people have increased 65 per cent.

Tax assessments have grown from $36,000 to $139,000 per annum. Branch banks have increased from 131 to 472, while the bank clearings in Winnipeg have advanced from $107,000,000 to $504,500,000. The foreign trade of the Northwest increased from $20,750,000 to $55,500,000; the exports last year in horses, cattle, sheep, furs, hides, wool, oats, wheat, flour, oatmeal and wood pulp amounting to $63,000,000, of which the United States took $12,000,000. The area of field crops in 1900 was 3,700,000 acres, last year 9,400,000, of which 4,800,000 acres are in Manitoba. Last year there were 1,592 elevators, with a capacity of 65,093,000 bushels, and 52 flour mills capable of turning out 25,000 barrels a day. From 1901 to last year 709,000 emigrants entered the Dominion, 239,000 coming from the United States, the majority of which settled in the Northwest.

It became necessary for the Manitoba government, in 1904, to consider the question of enabling the citizens to perform for themselves that which the monopoly had hitherto refused to do. As an evidence of the failure of the Bell company to live up to its responsibilities, it may be stated that at the beginning of 1905, after 24 years undisputed possession of the field, the monopoly had in Manitoba 5,532 telephones, in Alberta 730 and in Saskatchewan 442. Moreover, if the telephones in the capital of each province are neglected, the figures would be, in Manitoba 1,411, in Alberta 270 and in Saskatchewan 174. This, in a community of 800,000 people, one telephone to over 119 inhabitants, including the capitals of Winnipeg, Regina and Calgary, and one telephone to over 369 persons outside of these cities.

The provincial government appointed a committee of the legislature to inquire into telephone conditions elsewhere, and this committee, after securing all available information at home, visited the United States and held investigations in Minneapolis, St. Paul, Chicago and Grand Rapids, Mich., returning to Winnipeg firmly convinced that what had been accomplished by the Independents in your Union could with equal success be achieved by the people of Manitoba.

It was, however, decided that in order to completely cover the whole province, and more particularly the rural districts, with a properly equipped standard service within a reasonable time, that it was absolutely necessary that such means should be adopted as would secure the requisite capital without difficulty, and at a low rate of interest, which was only possible under public ownership. Certain necessary legislation was, therefore, introduced by the attorney general, the Hon. Colin H. Campbell, and passed by the legislature without dissent.

It was provided that a poll be taken at the municipal elections on December 18 last, in which every rate payer in the province was given the opportunity of voting upon the question, "Shall this municipality own and operate its own telephone." A vote in the affirmative gave the council power, subject to the government's approval, to proceed with the work and obtain the necessary capital for construction and extensions from time to time, without any necessity of issuing further by-laws, thereby rendering it impossible for the Bell at any time to harass a municipality in its fianancing, by influencing the electorate to vote against the issuing of bonds to take care of future growth.

Preparatory to the taking of this vote the government called upon the writer to conduct a campaign, which, from the number of meetings held, territory covered, literature distributed and unanimity of the verdict recorded against the Bell monopoly, is without a parallel in the history of the telephone fight on this continent. In this work loyal support was given by a corps of representative Independent telephone men from both Canada and the United States.

At the time of taking this vote there were in Manitoba 124 municipalities, in which the Bell had 49 exchanges. Those municipalities voting against the continuance of the monopoly represented 36 Bell exchanges and 9,000 subscribers (including Winnipeg, where the majority was 3 to 1), while those voting against the government's policy represented 13 Bell exchanges and 498 subscribers.

The Government of Manitoba is now preparing to build a complete system of toll lines, comprising approximately 1,500 miles of pole route, to connect the various local exchanges with Winnipeg, just as soon as the municipalities have their systems installed. The government long distance system will connect with the lines of the Tri-State company of Minneapolis, and thus form a link with the Canadian Northwest and the Independent companies in the United States.

The government is also making arrangements to commence the construction of a plant in the city of Winnipeg for 10,000 telephones, with an ultimate capacity of 20,000; also one in Brandon for 1,000 telephones, with an ultimate capacity of 5,000; the councils of both these cities having, by resolution, requested the government to provide these services. Portage La Prairie has not yet made any decision, but the legislature provides that the government will establish a local service in that city, and in all other municipalities in which the telephone by-law did not carry, upon the request of a reasonable number of rate payers. In this way there will be no missing links to the provincial system when it has been completed.

In regard to the municipal town and rural systems, already a number of municipalities are being canvassed for subscribers, and the results to date are most encouraging. In the first municipality canvassed, out of 450 farms, 300 signed contracts at $15 per annum have been obtained before a single pole has been ordered. In the two neighboring municipalities almost the same proportion of subscribers had been secured. It appears reasonable to prophesy that three years hence there will not be less than 50,000 telephones in Manitoba, connecting with the provincial long distance lines, instead of the 5,500, which the Bell had when the government inaugurated its present policy.

In Alberta the provincial government has adopted a policy similar to that of Manitoba, and has already completed some hundred miles of toll lines, including one between Calgary and Banff, 82 miles. Calgary recently passed, by a large majority, a by-law voting $120,000 to build and operate a municipal sys-

*Abstract from an address at the Chicago convention, June 6, 1907.

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tem in that city. Edmonton has been operating a municipal service for two years, and will install an automatic system of 2,000 telephones. The smaller towns and rural districts in this province will have either municipal or government systems.

In Saskatchewan, the neighbor province of Manitoba, the legislature this year voted $6,000 for preliminary work in regard to telephones, with a view to following the example of Manitoba and Alberta. East of Manitoba to the lakes there are only three cities of importance, viz., Kenora, Fort William and Port Arthur, and each of these municipalities owns and operates its telephone system, there being in the last two cities 1,800 municipal telephones, as compared with 200 Bell subscribers.

Five years hence there is little doubt that there will be a complete and modern service with a telephone in every farmhouse, having local and long distance connection with every village, town and city in the West, and with the Independent systems in the adjoining states over the border as far as the art of telephony will permit conversation.

Long Distance Service*

Its Development and Possibilities

By C. E. Tarte.

NOAH seems to have been the original traffic manager, and I think sent and received a reply to the first long distance message on record. Twice he had to say to his subscribers, "No circuit," but finally the line was clear, the message sent, and the answer brought good tidings of dry land, sunny days and a promise of that development of the human race which has continued to the present time, and which we trust will continue for centuries to come. From then until quite recently long distance development was slow and unsatisfactory, but the last ten years have shown a growth so rapid that it is astounding; what the next ten years will bring forth no one dares to prophesy.

All great movements have in them certain elements of combined strength and weakness. The strength and weakness of the Independent telephone movement lie in the fact that it represents so many and such diversified interests. Coming as we do from every State in the Union, with stockholders living in every county and almost every city and town in these States, we represent people of all classes and come nearer representing the entire people than any other convention held in this broad land of ours, with the exception, possibly, of the conventions of the great political parties. This is our strength. Each company managed by its local board of directors through its secretary, general manager, general superintendent, or whatever you may wish to call him, has ideas of its own, some good, some bad, some indifferent; but always in close touch with local people, knowing their habits, their needs, their conditions, we are better able to give satisfactory local exchange and "short haul" long distance service than companies managed and owned by directors and stockholders hundreds of miles away.

Long distance service, however, under this kind of management, is not necessarily satisfactory. If Johnson in Illinois wishes to talk with Jones in Ohio, or Morgan in Missouri, he must, to get good results, talk over lines operated under the same schedule of rates, the same time limits for conversation, the same code between operators, and in general terms built of the same class of construction and with about the same apparatus; and the companies handling his business must be assured that when his message is completed they will each get their share of the "haul."

We cannot expect to hold the business of the large manufacturer who wishes to talk with Pittsburg, Cleveland, St. Louis, Kansas City, Minneapolis, Dayton or Oshkosh unless we can give prompt and satisfactory service. If he uses our competitor's lines for the "long haul" he is likely to do the same for the "short haul." It is not claimed that this "long haul" long distance service is the most valuable or necessary part of our business—it is not by any means; but at the present time it is what we lack the most in the way of giving complete service to our subscribers.

"Short haul" long distance messages are, and I believe always will be, a most important factor in the building up of our business and earning profits for our stockholders. Ninety per cent at least of so-called long distance messages go to points within fifty miles of the originating station. There seems to be no limit to business of this character, except probably the limit to the number of circuits. Time and again I have seen new circuits built for the purpose of relieving congested lines, and the result is simply enough more business to make the new line as busy as the old one. Of course there is a limit to this, but few of us have reached it. In communities where there are enough circuits to take care of the 10 cent and 15 cent messages as fast as they are sent in it will be found that the telephone has practically superseded the mail as a medium for carrying on business.

The merchant, the manufacturer, the produce dealer cannot waste his time and the time of his clerks and stenographers writing letters and waiting for replies when for ten or fifteen cents and but little more time consumed than in getting a local subscriber he can get in touch with the party wanted from ten to twenty-five miles away. Build more lines of this kind. Copper is high, we all realize that, but with pole leads already up new lines can be built at comparatively low cost, and the investment will bring in surprising returns.

Trunk lines between the large commercial centers should be built at once; this matter is so essential to the success of the Independent movement that every effort should be made toward development along these lines without any further delay. A careful study of the map of the United States will show that the territory east of Kansas City almost to the Atlantic ocean is so filled with Independent exchanges and long distance lines that it is not going to be much of a problem to fill in the necessary gaps and make a long distance system so complete and comprehensive as to be astounding. When this is done our competitors are going to have a hard time stirring up trouble like they threatened in Indiana a short time ago.

You will find that in nine cases out of ten the Bell company induces local exchange companies either to connect with its lines or to become sub-licensees because the local company does not have enough long distance lines to take care of the business properly, and they think when they connect with the Bell their troubles will be over, but the awakening is generally a sad one. They find that while they are able, possibly, to talk with points five or six hundred miles away better than they were over the Independent lines, that to points in their own State they are more often worse off than they were before. I will venture to say that in the States of Michigan, Indiana and Ohio, and I presume in most of the other States, that service to points where from ninety to ninety-five per cent of the business is done can be secured with more satisfaction over the lines of the Independent companies than over the Bell, and yet their strongest talking point is what they call their "superior long distance service." Why? Because as stated before they undoubtedly beat us out in giving service to points five or six hundred miles away, and while only a few of the subscribers to any exchange talk with these far away points it still makes a drawing card and they use it for all it is worth.

Before any larger development can be made traffic associations

*Abstract from an address delivered at the International Convention, June 5, 1907.

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and clearing houses must be thoroughly organized. Neither companies nor individuals will put their money into lines unless they have positive assurance that they will have their share of the collections for all business going over them. This seems such a reasonable and sane proposition that it is almost absurd to make the statement; and yet the lack of appreciation of it is holding back Independent long distance development more than any other factor. As a general proposition each State should have its own traffic association and through the clearing house of this association all business inside the State should be handled. This State association should then be affiliated through its officers with the traffic associations of neighboring States, with which it does most of its business, and these interstate associations should then through their officers again form a national traffic association.

Operating rules, codes, time limits, rates (outside of those purely local in each State) and all methods of handling long distance business, etc., would be handled through these associations, and we would then have an organization stronger by far than if we were all in one large company, and still retain the strength that comes with local organizations, local directors and local stockholders.

Where the Copper Comes From—Montana*

By J. S. Haley.

IN the extent and magnitude of her mineral resources Montana stands pre-eminent and alone. First in value and importance of her mineral products is copper, for Montana is truly the state where the copper comes from, and while your finance committees are preparing the budget to take care of the extensions of your lines, or improvements of your great telephone plants and wondering how much advance they will have to pay for the next car of copper wire, the millionaire mine owner of Montana is resting secure in the fact that he practically holds the key to the situation. He knows that the great telephone development that is taking place will add yearly to his boundless wealth and the wealth of the great state of Montana—where the copper comes from.

In Montana we Independents are as yet in our infancy, but in the brief span of time feel that wonders have been accomplished. Telephone competition is new in this territory. The pioneer in the Independent telephone development in the state of Montana is P. B. Moss, the noted banker and financier of Billings, who for several years has owned and operated with great success the Mutual Telephone Company's plants in eastern Montana. The territory served by this company has every reason to be proud of the splendid service afforded, and the public has shown its appreciation by patronage far in excess of that awarded his Bell competitor. In the territory which it covers this company has practically double the number of patrons served by its competitor.

Next come the Home telephone plants, which have all been constructed and put in operation during the past year, in the territory directly west of that occupied by the Mutual company. These plants have all begun giving service during the earlier part of this year, and in point of number of subscribers and extent of service have surpassed all that has been accomplished in the past ten years in this field by the Bell companies. Directly west of these, in the territory of Butte and Helena, plants are now being built by the Montana Independent Telephone Company. Great progress has been made towards completion, and it is safe to say that during the next year there will be spent in this territory, by these various companies, approximately three million dollars in development work. All plants that are now in operation are connected up with the best of copper toll lines; the construction throughout is standard; and with the completion of lines now being built Montana will take a front rank among the Independent telephone states.

Independent telephony in Montana owes much to the efforts of W. H. Crumb & Co., of Chicago, through whose perseverance and labor a decision was secured from the Supreme Court of Montana whereby any telephone or telegraph company is permitted to construct its lines in the towns and cities of the state. The sum total of the situation is that the territory is divided into three sections, each covered by allied companies—the Mutual Telephone Company on the east, the Home Telephone Companies in the central and the Montana Independent Company on the west. All of these companies connect for the interchange of busines and form a most complete state system.

Taken as a whole the field has proven a fruitful one. The rates are adequate, making a satisfactory investment. In no case has there been any question of getting the business, but only the proposition of being able to supply the demand for service.

*Abstract from an address at the International Convention, June 5, 1907.

The Missouri Convention

MISSOURI Independents met at Kansas City early in May in convention, which was generally agreed to be the best attended and most interesting meeting which has ever been held in the State. Representatives of both large and small companies from all parts of Missouri were present, and also leading telephone men from the neighboring States of Kansas, Nebraska and Iowa. President W. B. Scruggs, of Springfield, called the convention to order and introduced Mayor Beardsley, who gave an address of welcome worded in an especially happy vein. He said, among other things, that the Independents have, from a very small beginning, carried development work so far that there was no predicting where they would stop, the problem of running a line to the planet Mars even being a possibility of the future. He spoke of their success as coming from a recognition of the value of giving good service and friendly treatment in all cases to their patrons.

Mr. Theodore Gary, of Macon, in his address to the meeting spoke of the attacks from newspapers and the acts of the legislature as showing that the people in general do not understand the telephone business. Perhaps some of the operators themselves are not well enough posted, as many of them have involved themselves in embarrassing situations through not admitting to themselves the true extent of depreciation in their plants, and advantage of this has been taken to create a certain amount of sentiment against them. The work of the association, he said, is probably best designated by the term "education." He referred to the value of telephone organizations, citing the associations in Indiana, Ohio and eastern Illinois as examples in which not only the general organization but district organizations are strong, holding five or six meetings a year, with one or two regular meetings and occasional special gatherings of the State associations, traveling secretaries being employed to keep all members in touch with one another. He closed his address with an appeal for charitable and friendly relations with all telephone men, saying that even those who have been misled into connection with opposition companies should be made welcome by Independent men, and they will gradually, as they learn more of the Independent business, see their own mistakes.

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President Scruggs in his address referred in the most favorable way to the efforts which the mutual and farmers companies are making toward the building up of the telephone business in rural districts, and spoke of them as natural allies to the Independent movement, saying that he proposed to take the position that they "are a benefit and absolute necessity to the success of the Independents, and that they have helped them to win the great fight." Referring directly to the work of the association, he spoke of the advantages which are to be gained if each member will do his own part cheerfully, promptly paying his dues at the proper time, taking care to attend every district and State meeting which he can possibly reach and performing such duties connected with his membership as he may be called upon to do.

When O. C. Snider, general manager of the Home Telephone Company, of Kansas City, first addressed the convention he brought to its attention the bill concerning long distance telephone rates which was before the Missouri legislature, and presented the following resolution:

WHEREAS, The Missouri House of Representatives on the 7th day of May, 1907, passed a bill fixing long distance telephone rates; and

WHEREAS, The rates named in said bill are an average reduction of about thirty per cent. on the present established rates; and

WHEREAS, Said bill is now pending in the State Senate; therefore, be it *Resolved*, By the Missouri Independent Telephone Association, in annual convention assembled:

1. The rates for long distance telephone service have been reduced by competition during the past few years to such an extent that there is now but a small margin of profit in the business.

2. If said bill is enacted into a law its effect will be not only to deprive the owners of toll lines of all profit whatever, but will inflict serious and irreparable loss. That it will stop further telephone development, impair the present service, and result in great injustice to thousands of citizens of our state who now have their money invested in telephone property.

3. This association, representing more than four hundred separate companies located in all parts of Missouri, and representing millions of dollars of investment of citizens of Missouri, earnestly protest against this measure, and call on our senators to defeat its passage.

The president appointed Mr. Snider and Mr. Hudson to see that each member of the committee on private corporations in the legislature receive a copy of the resolution.

F. G. Taggart, of Richmond, moved that a committee be appointed to revise the constitution and by-laws, and after the motion had been carried he was appointed to the committee, accompanied by Mr. Gary and Mr. Golladay, to carry out the work.

W. H. Bassett, of St. Louis, gave an interesting talk on Independent long distance companies and their co-operation with local companies which was very useful to the members.

Houck McHenry next spoke of telephone laws in Missouri, stating that at present and in the immediate future, as far as can be seen, there is absolutely no occasion for the passage of laws regulating the telephone business—regulation as exemplified in most of the bills which have been introduced during the present session would mean confiscation. These bills have been introduced mainly through a lack of knowledge on the part of the public of the characteristic features of the telephone business, as the majority of people are not aware that the profits do not increase in the same ratio as the growth, but that on the contrary the reverse is true. The average man is open to conviction, and it is the duty of the telephone man to educate the people and convince them that the telephone business is deserving of careful consideration before any legislative measures relating to it are adopted.

In speaking of taxation on telephone properties, Mr. J. A. Hudson referred humorously to the difficulties he had experienced in making out some of the state reports, and suggested that some modification might well be made which would do away with troubles such as he had met. W. B. Bentley, traffic manager of the Home Telephone Company, of Kansas City, summed up the essential features of local telephone operating for securing good service in an exceptionally clear and concise manner. At the close of his discussion the president appointed as a nominating committee Mr. Snider, Mr. Gary, Mr. Thompson and Mr. Bassett. After this the secretary read senate bill No. 23, which gives to cities throughout the state the power to regulate telephone charges, for the information of those members who were not familiar with the measure.

When called upon for a general talk on the telephone business S. S. Lichty, of Vinton, Ia., called upon his wide experience for a considerable number of details about the Independent movement, which were received with much interest by the members He referred especially to the benefits of organization to the small operators, and to the advantages to the other companies which come from interesting these people in the Independent movement.

Mr. Gary, in a brief address, traced the history of the International Association, and described some of the important work which it is doing for the assistance of the Independent companies throughout the country.

For the past two months the association has employed Mr. F. G. Taggart to visit exchanges throughout the State and assist in the work of organization, etc. His experiences formed the basis of one of the best talks given at the convention. He referred to the difficulties of interesting Mutual telephone operators in convention work, but at the same time stated that he found many of them were anxious to improve the service of their systems and put them on a better paying basis, and would be glad to associate themselves more closely with the Independents. There are some sections of the State where all that is needed to put the organization on the firmest basis is the building of toll lines, which will unite the plants more closely from an operating standpoint. Independent local plants are well developed and well managed.

Greetings to the members of the association were brought by R. E. Mattison, secretary of the Nebraska Association, and Mr. W. H. Nelson, president of the Kansas Association, as well as traveling Secretary Zimmerman, of the Kansas Association. All of these gentlemen told the Missouri Independents of the principal features of the work which they are doing in their own States, and discussed features in which all telephone men are interested together. Their remarks were received with the closest attention and interest by the Missouri members. Just before the report of the nominating committee was made an interesting talk upon Mutual business was given by George C. Campbell, of Bower Mills. The members moved to hold the next meeting in Kansas City, and then proceeded to approve the report of the committee on nominations, who presented the following names for officers:

President, Houck McHenry, Jefferson City, Mo.; secretary and treasurer, G. W. Schweer, Windsor, Mo.; delegates to national convention, Houck McHenry, Jefferson City, Mo.; M. L. Golladay, Holden, Mo.; H. L. Reber, St. Louis, Mo.; Judge J. F. Davidson, Hannibal, Mo.; Dr. S. T. Neill, Clinton, Mo. Alternates—A. T. Adams, Tipton, Mo.; Ed Foote, Pleasant Hill, Mo.; H. D. Hibbeker, Washington, Mo.; J. F. Barnett, Rutledge, Mo.; B. E. Oeff, Warsaw, Mo. Registration committee, H. L. Gary, Macon, Mo.

The committee on the revision of the constitution and by-laws reported that revision was unnecessary, and their report was approved by the members.

After this business had been transacted there were a number of talks by different members concerning important questions which are now before the Missouri operators. Dr. Neill, of Clinton, presented a paper on the Taxation of Rural Lines which set forth a plan which many of the members thought would be very useful if it could be properly carried out. His paper, in part, read as follows:

"I would suggest that all telephone companies that occupy, or cross the county roads, should be compelled to incorporate under the state law, and before building should file a plan of their proposed route, giving a detailed statement of the size, kind and number of poles to be used and height at which the wire will be strung along such roadway and show where other existing lines will be crossed or paralleled; this map should be filed with the county clerk of the county and should be submitted to the county court with the request that the right to construct the proposed line be granted at the next term of the

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court thirty days later. This will give ample time for any one likely to be injured or molested by the construction of a proposed line to appear before the court and object to the erection of the new line, and if in the judgment of the court the erection of the line will interfere with complainants' line, changes and alterations can be ordered made before an order is made to permit the construction to proceed.

"When the line is completed the officials of the company should file a full and complete report and map showing the number of poles used, miles of wire, number and kind of telephones, switchboard and equipment and cost of same, to be filed for a permanent record.

"Then we will have a complete record of each telephone company in the State and in each county, and can fix the tax rate on all equally. This plan looks simple in operation and sure in result; it certainly would assist the officials of each company who are called upon to make up the list and swear to it once each year."

At the close of the meeting Mr. Gary moved that the officers be instructed to invite all Mutual companies in the state to meet with the convention next year. The register showed that over two hundred and fifty members were present, and everyone expressed himself as more than pleased with the results of the Convention, and stated his readiness to carry on with all his power the work of developing and perfecting the organization throughout the state.

Telephone Legislation in Texas*

By J. B. Earle, Waco.

WITHOUT the matter having been discussed before the people or in any way agitated, some member of the Committee on Resolution and Platform at the Democratic state convention, which met in Dallas, Aug. 1906, introduced and had the committee accept a platform demand requiring all telephone and telegraph companies to connect. There was, however, more or less agitation on this subject in the papers after the convention adjourned. When the Texas legislature convened two or three bills were introduced affecting telephone properties, one of which required all telephone companies to connect with all other companies of every kind, competing exchanges, competing long distance lines and lines that were not competing. This measure was bitterly opposed by the Southwestern Telephone & Telegraph Company (Bell) as well as by the Independents; all companies preferring to be left alone to make their own contracts for connection.

The telephone companies were given ample time to discuss this matter before the Committee on Corporations and the result was the bill was killed in committee, but a substitute was reported by a majority of the committee, proposing to compel a connection between companies at common points for such business as originated at a point where only one company had an office and terminating at a point where only the other company had an office, that is, to take care of non-competitive business. Another bill was proposed and offered as a substitute for this allowing either company, if it so desired, to go into the district court and on the merits of the case have an order entered by the district judge setting forth whether or not a connection should be made and if so the terms and conditions. At the suggestion of the Independent Telephone Association of Texas, the following section was incorporated in this bill for the protection of the small companies and the prevention of discrimination on the part of the Bell:

"Sec. 10. The schedule of regular rates for long distance business in force by telephone and telegraph companies in this State on the 1st day of January, 1907, shall be, and is hereby made, the maximum rate to be charged by the respective companies hereafter for such or similar service. The rate for telephone companies shall be non-descriminating and it shall be unlawful for any telephone company to charge a higher rate for any form of local telephone service or long distance telephone service between diffrent persons in any one exchange, or between any two or more points on its long distance lines; and for local exchange service a company shall charge the same rate for substantially the same service in one town as charged by said company in another town, where the exchanges come within the same class as herein specified. Class No. 1 shall consist of telephone exchanges in which there are not more than five hundred telephones in operation in each said exchange; Class No. 2 shall consist of telephone exchanges in which there are not more than one thousand telephones in operation in each such exchange; Class No. 3 shall consist of telephone exchanges in which there are not more than three thousand telephones in operation in such exchange, and Class No. 4 shall consist of telephone exchanges in which there are three thousand or more telephones in operation in each exchange."

If the above bill had been enacted into a law their rates would necessarily be the same for the same character of service the State over. These bills were never reached at the regular session.

When the special session of the legislature was called this plank in the platform came in for mention by the Governor. A bill to meet the demand was passed by the Senate and sent to the House, and when the section quoted was offered as an amendment it would probably have carried, but was held not to be germane to the connection bill, the regulation of rates, etc., not being mentioned in the Governor's message, and was out of order.

This bill, as passed, provides that telephone and telegraph companies shall be compelled to make physical connection between their toll lines at common points for the transmission of messages or conversations from one line to another; such connections to be made between the switchboards of such companies, if any are maintained at such points, and provides "that no telephone or telegraph company, under the provisions of this Act, be compelled to receive from the lines or wires of any other company and carry to its final destination any message originating at any point on its own lines."

The bill also provides that this shall be done by order of the city council, in incorporated cities, and in the Commissioners Court at points where there is no city council. After an application has been made, if it shall determine upon final hearing that it would be for public convenience and justice to the telephone or telegraph companies to make such connection, whereupon they shall enter on record their findings and shall set out in their order the conditions upon which such arrangements of conversation shall be made.

The bill carries the emergency clause and went into effect on May 12, last.

I take it, under provisions of this bill, that a connection can be forced by one company upon another from a non-competitive point, but the attitude of the Bell telephone system toward the Independents in Texas, and that of the Independents toward the Bell system renders it very improbable that either company will ever make application for this connection. This kind of legislation is undemocratic, but having been placed in a Democratic platform had to be passed where the Democracy is as strong as it is in Texas.

There was another law placed upon the statute books during the last session of our legislature just adjourned, known as the Anti-Pass Bill, which applies to railroads, street cars, interurban, express and sleeping cars, telephone and telegraph companies, preventing discrimination at least in long distance service. Among other things this law provides in Section 4 that:

"No company subject to the provision of this act shall, directly or indirectly, by any special rate, rebate, drawback or other device or exchange demand, charge, collect or receive from any person, firm, association of persons or corporation a greater or less or different compensation for any service rendered or to be rendered, in the transportation of passengers, property or messages than it charges, demands, collects or receives from any other person, firm, association of persons or corporation for doing for

*Abstract from an address at the International Convention, June 5, 1907.

(Continued on page 404.)

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From the Editor's Viewpoint

KEEPING TRACK OF TELEPHONE MATERIAL.

WHEN the engineer, manager, construction foreman or any other employee of a telephone company stops to consider that every stroke of work he does involves the use of material furnished by the company he begins to realize how essential a matter it is that these goods should be handled by an efficient system. Good work in the storekeeper's department will do a great deal toward keeping the construction and auditing departments running smoothly, and turning out work on time. On the other hand, the storekeeper who fails to maintain the proper relation between his stock and his accounts is able to mix things up frightfully, as many telephone men have found out to their sorrow.

Mr. Tracy in his present serial article has set forth some of the methods which he has adopted for taking care of the material used by the Toledo Home Telephone Company. We understand that the results obtained by him in this work are considered by well informed telephone men to be exceptional, and we believe they are admirably set forth in his article. Still, there is a great deal more to be said on the same subject, and Mr. Tracy frankly states that one of his principal objects in publishing this article was to call forth friendly criticism from his colleagues in the same line of work, with a view to settling on the best methods of accomplishing certain results. If this is an invitation to correspond with THE AMERICAN TELEPHONE JOURNAL on this subject, we are glad to second it in our own name.

This field is open not only to men connected with the supply department, but with all other departments. Each one uses stock, and may at any time devise an improvement in methods of handling it or accounting for it. Who has some good ideas?

POKING UP THE DELINQUENTS.

ABOUT everyone who has participated in the recent state conventions of Independent telephone men, or in the big convention at Chicago which has just closed, is pretty keen on boosting the organization. The good men have got together and renewed their impressions of each others' worth, and found new evidences of the benefit which comes from co-operation with the other fellows in order to reap the advantages of the boosting which they are all doing in close combination. Aside from those who have been to the conventions there are a good many telephone men who for various reasons were unable to attend, and many of these are just as firm believers in the organization and just as enthusiastic workers for its success as those who went to Chicago. The International Association and many state organizations have been established on such a firm basis that their definite working plans are quite well known in every part of the country and their respective states, and the thing which is most necessary now is to have everyone in the business get to work on these plans.

It is not enough that a few men in each district should come out to a convention once a year and report progress. What is needed is for every man in a district to get together with his neighbors as often as possible and plan things, so that whatever work is being pushed forward for the common good will make steady, smooth and equal progress in all parts of the district.

The telephone association is not a social club, but a business organization. Now this ideal condition, where all telephone men work together on certain lines of common interest, can never be realized unless everyone who operates an Independent telephone system is interested in the work, and if anyone hangs back the very first thing for the active members to do is to wake him up. Let two or three good men make it their first duty to go after each delinquent and show him how he is going to lag behind in his own business by failing to keep in touch with the progressive plans in which the association leads.

It will be a good thing to outline for such a man the benefits derived from the association plans on both local and national scales. A person who has not been in close touch with the association's doings cannot be expected to appreciate their value. He needs education. If necessary, it would be worth while to get definite data and letters from telephone managers in several localities for use in such cases. There are plenty of managers who would be only too glad to help in such a movement by telling their experiences. The idea is to show how the closer association, made possible by regular meetings and a discussion of subjects of common interest, has made it possible for each member to keep in touch with the entire field of telephone operation, where his unaided efforts would only suffice to cover a portion of them. Then, too, in planning for extensions, getting toll line business, watching competitors and other affairs of this sort, there is the greatest advantage from the co-operation of neighbors. If those who take up the subject have for any considerable length of time been members of a district organization they will not lack for illustrations of its value among their own members, and these will furnish the most convincing proof to the person they wish to interest, and these examples from near home are the very best.

Just now it is not so important to get an early start on universal plans for trunk line building, map drawing, gathering of statistics and other things of this sort, as it is to fill up the many small gaps in the organization. If this could be done by vigorous work in, say for the sake of example, six months, how long would it take then to get a set of maps, figures, etc.? How long would it take for everyone to swing into line to push any new movement for the common good, if every operator were in close touch with and in full sympathy with his district organization? That is what brings business and power to both big and small companies in well organized states like Ohio, Indiana and Iowa.

Think this over if you are an association worker, and get after your neighbor who is not, and do not stop until you bring him in. If, on the other hand, you are one of the fellows who have never done much to promote association work, this is the best time to start. You will probably want to share in the benefits of this work many times in the year. Give yourself an opportunity!

GOOD WORK OF THE FINANCE COMMITTEE.

ONE of the most pleasing and gratifying features of the recent convention at Chicago was the good work of the Finance Committee in raising a special fund to relieve the association of a deficit, and the prompt response which the committee met from persons called upon for aid. It was found that at the time of the convention the association, on account of the large amount of work which had been recently carried on, found itself facing a deficit. To relieve this situation, in order that the association might start the coming year free from debt, a finance committee was appointed, with the following members: Ed. L. Barber, of Wauseon, O., chairman; Charles Y. McVey, Cleveland, O., vice-chairman; W. B. Woodbury, Detroit, secretary and treasurer; H. B. McMeal, Telephony Publishing Company; W. H. McDonough, AMERICAN TELEPHONE JOURNAL; J. G. Ihmsen, American Electric Telephone Company, and W. E. Doolittle, Sterling Electric Company.

They went to work so vigorously upon the task which had been set them that not only was the deficit very promptly cleared, but a considerable additional sum was raised, so that the association had, as the result of their efforts, a very substantial amount to its credit to start the coming year's work. This was raised through the direct contributions of leading operating companies and officials, manufacturing houses and publishers of telephone papers. The committee is to be congratulated upon the good progress made, and the association is likewise to be congratulated upon having members and friends who will meet an emergency like this so promptly and willingly as did those who responded to the call of this committee.

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Legal Snares Untangled

CONDUCTED BY A. H. McMILLAN.

PERMISSION TO CONSTRUCT LINE BINDING THOUGH GIVEN BY OWNER'S AGENT.

Thirteen years ago this spring A rented a farm of B, paying money rental, A to look after things just as if the farm was his. This A did, paying the taxes, making repairs and charging them to B when it was for him to pay. During this time A with other neighbors became interested in a mutual telegraph line, setting poles along the highway of B's farm. This line was soon changed to a telephone line.

Two years ago it was incorporated and part of it repoled.

During this term of years B visited the farm once in a while. At no time was there a word of fault found with A, or anything that he did.

This spring B has sold the place to C. C has ordered the poles removed from the highway.

What are the rights of the telephone company? F. W. H.

IN the case you state, A was agent as well as tenant for B and in accordance with the principles of the law of agency, the principal in this case was bound by the actions of the agent. The authority given the agent "to look after things just as though the farm was his" was ample enough in itself to authorize him to give a license to the telephone company, but more than this, the principal B practically ratified his agent's conduct in visiting the farm and finding no fault with the existence of the poles along the highway. The fact that the line was changed from telegraph to telephone and from a mutual to an incorporated company is not material.

PAINTING POLES—HOUSE MOVING.

Please advise me through the Law Column of your paper the following:

The city council here passed an ordinance requiring all telephone companies within the corporation line to paint their poles, i. e., all that is above ground, two coats of white paint and the cross arms two coats of red paint. When we were granted a franchise there was nothing in it about us painting poles. Can they compel us to paint all poles within the limit they specified in the ordinance?

A contractor is moving a two story house in the country and in so moving it is necessary for us to take our wires down. At one place where he crosses us our poles are 30 ft. high, and on a corner we will be compelled to take our guy wire down and also put fixtures on the poles in order for him to pass under. We have already gone to a lot of expense for him in changing our wires. We ask him to pay the expense, he refuses; can we compel him to pay it? M. J. C.

THE city has the right to regulate poles and wires in its limits independent of whether it has reserved that right in its franchise. It can require you as a police measure to paint your poles within the limits specified in your franchise.

Moving houses is not a use for which the highway is intended, so that a telephone company can compel a house mover to pay the expenses of taking its wires down to permit him to cross its line. Northwestern Telephone Exchange vs. Anderson, 98 N. W. 706.

CONTRACTS FOR TELEPHONE RENTAL HELD BINDING.

AT Watertown, New York, two interesting cases were recently decided involving the binding character of contracts for telephone rental. One case was a suit brought by the Citizens' Telephone Company vs. Edward Farrell for telephone rental of $16.50. The company had allowed him three months' free service, dating the contract three months ahead, as was the custom of both companies in the city at that time. After three or four months he went to work for the Bell company and wanted to take out the Citizens' telephone, ignoring his contract. When the company brought suit the defendant claimed that the telephone was put in for three months on trial, but this was not proven, and the company was allowed the full amount of its claim.

In the other case, which was even more interesting, the party signed a contract for one year which read, "For one year and thereafter until one month's notice from either party." Afterwards the other company offered him free service, so he decided to take out the Citizens' telephone in defiance of his contract. The court sustained the validity of this contract and compelled the subscriber to pay the rental in spite of the fact that the company was disabled, by the subscriber's action, from furnishing service.

POLES WHICH DO NOT FORM AN OBSTRUCTION CANNOT BE REMOVED FROM THE STREETS.

THE United States Court at Mobile, Alabama, has decided the case of the Southern Bell Telephone Company against the city favorably to the defendant. The suit was brought to restrain the city from cutting down certain telephone poles.

The court holds that the poles in question are not erected in violation of the city ordinances, but under the contracts granted to the company in certain city ordinances, and therefore are not under the police regulation of the city, as they do not form an obstruction to the streets. The Court says: "My opinion is that the defendants cannot be permitted to oust the complainant from possession and use of its poles by cutting and removing them from their places on the streets without due process of law. An injunction will be granted to restrain a party from deciding for himself a question involving controverted rights, and compel him to resort to the courts, and this without regard to the absolute merits of the controversy. It is enough that there is such controversy to justify the interference of a court of equity. The motion to dismiss the bill for want of equity is denied, the demurrer to the bill is overruled and an injunction *pendente lite* is granted as prayed for."

ORGANIZING A RURAL TELEPHONE COMPANY.

You will greatly oblige a number of farmers in this locality by giving a brief statement of the laws concerning rural telephone lines.

Is it necessary to secure a charter? If some landholder is cranky or stubborn and forbids building a line along the road by his farm, what can be done under such circumstances? How far from the middle of the road should the poles be set? What form of organization and agreement would be best to follow? E. B.

IN general it is better that those who erect rural telephone lines incorporate under the laws of the State. Such incorporation obviates the liability to many complications that may arise under a partnership arrangement. Further, the laws conferring rights needed in erecting and maintaining the line are drawn with reference to incorporated companies, and, while these rights might be held as pertaining to individuals or partnerships engaged in such enterprises, the intent was clearly to confer them upon incorporated companies. For the laws governing the formation and management of corporations, see Chapter 23 of the Revised Statutes of 1905. Blank forms may be obtained on application to the Secretary of State, Topeka, Kan.

Telephone companies are given the rights and powers conferred, and are subject to the liabilities and duties imposed by the general laws of this State upon telegraph companies. (See Sections 1323, 1324, General Statutes of 1905.)

"Corporations created for the purpose of constructing and maintaining magnetic telegraph lines are authorized to set their poles, piers, abutments, wires and other fixtures along, upon and across any of the public roads, streets and waters of this State, in such manner as not to incommode the public in the use of such roads, streets and waters." (General Statutes, 1905, Section 1408.)

Such companies are also given very wide authority as to privately owned lands, and may condemn rights of way over them.

As construed by the courts, there is little legal restriction as to where the poles shall be set along the highway. In exercising its powers, the corporation should have due regard not only for the convenience of the public, but also for the convenience of the abutting land owners, and for the appearance of the landscape.

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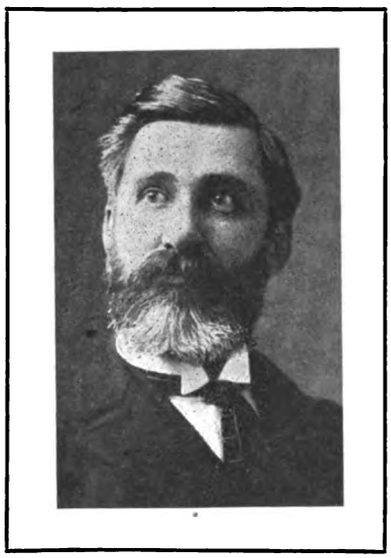
The West Virginia Convention

ALTHOUGH this was only its second meeting, the West Virginia Independent Telephone Association held a very successful convention at Wheeling on May 9th and 10th. Early in the day the meeting opened with a large attendance, and Mayor C. C. Schmidt welcomed the delegates warmly to the city. A cordial response to his greeting was made by J. Walter Barnes, of Fairmont. Immediately after this opening the routine business was taken up, and Secretary Davis read the minutes of the first convention, which was held last year in Parkersburg. Treasurer Lloyd Beeghley read his report, which was approved. President Handlan in his annual address gave a general review of the telephone situation throughout the country, but more especially in his state. Remarks on the growth of Independent companies, and the value of closer relations, which are being developed as their service increases and the state becomes better organized, were greeted with special attention. After Mr. Handlan had finished, an address was made by E. K. Hertford, general manager of the Charleston Home Telephone Company, of Charleston, which was agreed by the members to be an exceptionally able paper. Mr. Hertford spoke this year on the subject of "Telephone Associations," although he is perhaps best known as a student of operating problems, having devoted a great deal of attention to operating methods in his exchange, even devising an automatic arrangement for recording certain details in connection with the timing of calls.



J. Walter Barnes.

As the roll call was made during this first session of the convention, the delegates in each company not only gave their names and those of the companies they represented, but also gave a brief statement of local conditions. This served to make the members of the Association better acquainted with affairs throughout the state at the very start of the meeting. President Handlan appointed several committees for facilitating the handling of business at the convention, and those who were chosen to serve on them were as follows:

Resolutions, J. Walter Barnes, Lon H. Hutchison and Bruce Ash; nominations, L. L. Long, B. F. Farrell and E. K. Hertford; legislation, John A. Howard, T. P. Moats and A. C. Davis.

After these appointments had been announced the convention adjourned for the day, and the members attended in the evening a vaudeville entertainment and banquet, which was thoroughly enjoyed.

On the second day many subjects of general interest were discussed, and considerable benefit was derived by the members from an opportunity to listen to the views of experts. Not only did some of the best men in West Virginia describe their experiences, but telephone men from the neighboring states participated in a way which was thoroughly appreciated by the West Virginia men. The program for this meeting was as follows :

Standard Construction, Frank B. Hall, Rochester, Pa., Consulting Telephone Engineer.

Value of Good Toll Lines, Frank Hart, Pittsburg, Pa., Supt. Long Distance, Pittsburg & Allegheny Telephone Company.

Pooling of Toll Lines, W. C. Handlan, Wheeling, General Manager National Telephone Company.

The Folly of the Sub-licensee, J. Walter Barnes, Fairmont, General Manager Consolidated Telephone Company.

Our Employes, Lon H. Hutchison, Huntington, General Manager Huntington Mutual Telephone Company.

The Right of Territory, J. W. Downs, Buckhannon, General Manager Buckhannon Telephone Company.

Independent Telephone Securities, A. C. Davis, Parkersburg, General Manager West Virginia Western Telephone Company.

Rural Telephones, T. B. Lee, General Manager State Mutual Telegraph & Telephone Company, Waynesburg, Pennsylvania.

During the afternoon session of the convention officers for the coming year were elected as follows: President, A. C. Davis; secretary, Lon H. Hutchison; treasurer, Lloyd Beeghley. The Executive Committee which handled the affairs of the association during the past year will continue in office without change. Its members are W. C. Handlan, J. Walter Barnes, Lon H. Hutchison, E. K. Hertford and A. C. Davis. Mr. Barnes was re-elected a member of the Advisory Board.

THE ARKANSAS CONVENTION—ADJOURNED MEETING.

THERE were about twenty-five delegates present at the adjourned meeting of the Arkansas Independent Telphone Association, held at the Electric Park, in Fort Smith, May 20, nearly all of whom were from the western part of the State. This meeting illustrates the good of conventions in a peculiar way, as there was no one present who knew all the delegates, and there were very few who knew more than two or three of those present.

Mr. A. E. Boqua, Jr., welcomed the delegates in the absence of his father. He handled the matter nicely, and was busy all day in the interest of the association.

The president, Mr. P. C. Ewing, of Little Rock, responded, saying in part: "As a matter of current news and appreciable gossip we note that the State has above 40,000 toll telephones not owned by the Bell company in operation, but on account of our lack of toll lines about seventy-five per cent of them are connected with the Bell company. We believe that if we will furnish this seventy-five per cent with the connections which they need, over 90 per cent of them will come with us.

"Our exchanges are constantly being improved. The Pine Bluff exchange has lately added materially to the betterment of its lines by installing cable in place of open wire, and making lines metallic. The Little Rock exchange has rebuilt a large section of the city with practically all cable metallic construction. The Russellville exchange has been greatly improved under its present management and reports good paying business. Jonesboro has about completed a 600 line exchange of modern construction, which has been spoken of in the highest terms by those who have seen it. We have been informed that Bald Knob is branching out in their work. Taking the situation throughout the State, the increase and improvements since our last meeting show very satisfactorily.

"We make this business proposition as an axiom, no matter what class of business it may be applied to: Find out what your customers require, and then furnish it to them. If you do this they will cheerfully pay you a reasonable price, a price that will assure you of financial gain and pleasant business relations. Failure on your part to furnish them what they require, giving them instead something inferior and unsatisfactory, even at half price, will cause trouble between you and your customers and eventually troubles in your finance.

"About twelve years ago we commenced building Independent exchanges in this State (we will except Fort Smith, which had an Independent exchange several years previous to that). At that time the greater part of the business was purely local, few toll lines were in operation and very few people, comparatively, used them. But, with the stimulus injected into the business by the Independents there followed an increased demand

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for territorial lines. Right here the Independents made their first and probably greatest mistake. Companies were organized and they with individuals built local exchanges in practically every town where there was a Bell plant, and of nearly the same capacity, which in a very short time was entirely inadequate to the demands of the locality.

"Demands soon came for territorial service, but the companies and individuals could not furnish it, being taxed to their utmost to take care of the local business; the consequences were failure to supply their customers what they required. The conditions in other states were similar to those in this state, but in most cases they were met fairly and squarely as they developed. If the local exchanges were able they extended their lines to meet each other; if not, other companies were organized to build the connecting links.

"It has been our habit to do one thing at a time and when we made a mistake to correct it as soon as possible. When this mistake of practically isolating ourselves from each other has been corrected, the faults, mistakes and difficulties under which we are laboring will be comparatively easy of solution.

"And now the remedy—shall we do as some of our half-brothers have done and obtain the necessary connection with the A. T. & T. Co.? Individually I am opposed to the crime of suicide and especially in this form. It is my serious intention and desire to live as long as I can see any one else live, and to do my talking over and through Independent telephones and cables.

"Another method is to build connecting links in your immediate territory, as has been done in other states. This has the objection of possible lack of uniformity, but is much better than nothing. Still another method, which appears to be the best, is to have one long distance company. This has been done in part only by the organization of the Telegraphone Company, chartered and owning the right of way between Pine Bluff and Little Rock, and it is for the common interest of the members of the association to co-operate with this company in every possible way."

Among the companies represented were: Home Telephone Company, Ozark; Little Rock Telephone Company, Little Rock; Pan Telephone Company, Fort Smith; Russellville Telephone Company, Russellville; Franklin County Telephone Company, Paris; The Telegraphone Company, Little Rock; North Arkansas Telephone Company, Fayetteville; Siloam Springs Telephone Company, Siloam Springs; Branch Telephone Company, Branch; Sebastian County Telephone Company, Spring Hill; Western Telephone Company, Ozark; Felker Telephone Company, Mulbury.

The Manufacturers represented were: Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y.; North Electric Company, Cleveland; Frank B. Cook, Chicago; American Electric Telephone Company, Chicago.

Mr. Chas. Suttor, of St. Louis, arrived on the afternoon train and immediately on arrival requested details as to the present plan for long distance lines in the state. When these were furnished him, after getting all the facts he expressed his approval and agreed to get behind the proposition after his engineer has approved the plans. This is believed to mean much to the movement, as Mr. Suttor has the reputation of being a man who does things.

MANAGING A TELEPHONE COMPANY'S SUPPLY DEPARTMENT.

(*Continued from page* 395.)

a private branch exchange, or switchboard paraphernalia; something that will not be likely to occur again, but it must be accounted for.

The writer would treat this as he does "Incidentals." The "Special Equipment" card shows the date, number of the purchasing order and distribution. Then if one wants to refer to it he has a chain of references leading back to the man who ordered it purchased. The one rule to be remembered is to charge "Incidentals," "Special Equipment," etc., as soon as the invoice reaches you, before you forget the prices and other details.

This idea can be elaborated upon still further, to provide a separate card for each of a variety of articles that are similar but not alike, as "Stove bolts, all kinds"; "Soap, all kinds"; "Furniture polish," and a dozen other lines; things that take more time in the accounting than in the using. These are all carried in the warehouse, to be sure, but they are no longer in the warehouse accounts.

(*To be continued.*)

NO FREE TELEPHONES.

THE Steinauer Telephone Company has removed its telephone from the depot in Steinauer, Neb., its contention being that the instrument cannot be longer maintained there according to law. The action was taken to comply with the anti-pass law, there being a provision that a public service corporation cannot extend such courtesies to another corporation or individual. No charge had been made for the use of the instrument, but the telephone was maintained there for the accommodation of the company's subscribers.

TELEPHONE LEGISLATION IN TEXAS.

(*Continued from page* 400.)

him, them or it, a like service, if the transportation or transmission is a like kind of traffic or service under substantially similar circumstances and conditions, and any such company violating this provision shall be deemed guilty of a misdemeanor, and for each offence, on conviction, shall pay to the State of Texas a penalty of five thousand dollars."

Sections 6 and 7 provide that "Any person other than the person excepted in this act, who uses any such free tickets, free pass or free transportation, frank or privilege over any railway or other transportation line or sleeping or express car, telegraph or telephone line mentioned in this act, for any distance under the control and operation of either of said companies subject to the provisions of this act or under their authority, or shall knowingly and wilfully by any means or device whatsoever obtain, use or enjoy from any such company a less fare or rate than is charged, demanded, collected or received by any such company, from any other person, firm, association or persons or corporation for doing for him, them or it, a like service if the transportation of service or of a like kind of traffic or service under substantially similar circumstances and conditions, such person or such officer or agent who acts for such corporation or company thus favored, shall be guilty of a misdemeanor, and on conviction for such offense, shall be fined not less than $100 and not more than $1,000.

"Any director, officer, agent or any receiver, trustee, lessee or person acting for or employed by any company subject to the provisions of this act who alone or with any other corporation, company, person or party, shall wilfully do, or cause to be done, or shall wilfully suffer or permit to be done any act, matter or thing in this act prohibited or declared to be unlawful, or who shall aid or abet therein, or shall wilfully omit or fail to do any act, matter or thing in this act required to be done, or shall cause or shall wilfully suffer or permit any act, matter or thing so directed, required by this act to be done, not to be done or shall aid or abet any such omission or failure, or shall be guilty of any infraction of this act or shall aid or abet therein, shall be deemed guilty of a misdemeanor and shall, upon conviction, be subject to a fine of not less than $100, nor more than $1,000, and if the offense for which any person shall be convicted under this section shall be unlawful discrimination in rates, fares or charges for the transportation of passengers or property or the transmission of messages such persons may, in addition to the fines hereinbefore provided for, at the discretion of the jury, be imprisoned in the penitentiary for a term of not less than six months nor more than two years."

It is believed that in view of the above legislation, discrimination will cease and without discrimination and unfair methods the Bell Telephone Company will be unable to crush the Independent companies now operating in Texas or to prevent the steady invasion of other territory by new companies.

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From Here and There

BELL COMPANY ENDEAVORING TO FORESTALL GOVERNMENT LINES WITH CANADIAN FARMERS.

REPORTS from various parts of Manitoba show that the Bell Telephone Company is actively convassing farmers with the object of inducing them to establish rural telephone lines. The company now offers to provide long distance connections, the lack of which under reasonable terms was the cause of the great agitation of last year.

Prominent Independent telephone men are pointing out that it would, of course, suit the purposes of the Bell monopoly admirably to have rural feeders for its long distance lines supplied at other people's expense. It would be a case of the people taking their grist to the Bell's mill. The farmers would stand the cost of the least profitable business—the rural branch lines—and the Bell would reap the profits of a largely expanded long distance business.

At the same time they draw attention to the fact that whatever else the farmers do in the direction outlined by the Bell Telephone Co. they should be careful not to enter into any contract with the company. It will be the policy of the Bell people to tie up as many people as possible on one, two and three years contracts in order to forestall the government owned system. No matter how attractive the Bell may make its offer, it should not be permitted to have any exclusive rights of connection with rural lines. Whatever lines the farmers build they should hold free to accept at any time the benefits of connection with long distance lines of the public telephone system.

A NEW WAY TO BEAT A BAD LINE.

FRED WINTERS, special correspondent for the Associated Press, Chicago, Ill., is probably the originator of a decidedly novel method of communicating over a telephone line where the quality of transmission is poor. It seems that some time ago he was trying to talk with an associate at the other end of a wire over which it was absolutely impossible to distinguish words.

An occasional letter could be heard, and it was evident that the wire was connected through all right. Mr. Winters hesitated only for a moment, then seized an empty cigar box and placed it against the transmitter, drew out a penknife and tapped off a message in the Morse code on the improvised resonator. Then he listened at the receiver, and in a moment had the satisfaction of hearing the familiar Morse signals clicking back in response from the other end of the line.

HOME TELEPHONE COMPANY WINS ENTRANCE TO CONDUITS IN NASHVILLE.

AFTER a fight covering a period of three years in which the Home Telephone Company of Tennessee won in the courts and in the state legislature, the city council of Nashville has agreed to allow the company to go into the conduit system now being constructed there by G. M. Gest. The Home company first suggested a conduit system, but the city council refused it a franchise. Pending the course through the courts the Cumberland company made the city a proposition to go into conduit with the Western Union, Postal Telegraph, light company and the city light lines. The deal was closed and the city council passed an ordinance forcing all wires underground in the congested business districts of the city. With the conduit system partly finished and belonging to other interests, the Home company had a difficult problem to solve, when it finally won every case in court and secured a new law governing telephone companies. The matter was taken up by citizens who assisted the Home company, and the council has finally decided to let the company into the conduit contract.

Those who have kept in close touch with the situation say that if there is any character of obstacle this company has not gone up against since it began the fight with the Cumberland company it is not in the records of the difficulties of Independents. Only one more straw is in the way—the constitutionality of the law passed by the recent legislature granting telephone companies the use of streets and public highways. This case is now in court and with it settled the Home Company of Tennessee will probably have smooth sailing.

A VIGOROUS PROTEST.

NOT long ago an official at the headquarters of one of our large telephone companies received a letter which was the occasion of considerable amusement among the staff, and is well worth passing along. Here it is, heading and all:

JEAN DE VEAU
DEALER IN
CONFECTIONERY, FRUITS, TOBACCO,
CIGARS, FRESH CANDIES AND SOFT DRINKS.
ICE CREAM AND OYSTERS IN SEASON.
———, New Mexico.

——— Telephone Company,
———, New Mexico.

Sirs.

I am writing you in regard to the satasfaction we are getting at —— we have not had no satasfaction for to weeks not atall it is very tiresom now if you dont see to that atonce I will take your phone an throw it out In the street. I am. very tired of that kind of work I have bin treying to tell them about it but I could not get thèm to the phone it seams like you cannot get no satasfaction outen of the mgr him he flirts with them and he dont care for us. now I am writing you I mean business or I would not write now see to that at once. our I will do as I said I am not going to stand here and loose my time trying to talk to them and not get eny thing for it

now please see to that. amediatly

Yours truly

JEAN DE VEAU

Of course there was no way to avoid firing the manager after this!

CONNECTICUT TELEPHONE SUBSCRIBERS LEARN MUCH ABOUT COMPETITION.

AS is generally known, the state laws of Connecticut are such as to practically give a complete monopoly to the Bell company which operates there. Efforts are being made to effect changes which will permit Independent companies to operate in this territory, and a general campaign of education is being carried on. Recently full page advertisements appeared in the newspapers of Hartford, the capital of the state, tending to show how competition has increased development, and also reduced rates in a considerable number of states where Independent systems have been in operation for some time.

PETERSBURG, IND., REFUSES TO EXTEND BELL FRANCHISE WITHOUT COMPENSATION.

THE franchise of the Cumberland Telephone & Telegraph Company at Petersburg, Ind., will expire this month and the city council has notified the company of the terms on which it may be renewed. The council's notice says that unless the Cumberland company pays $500 cash into the city treasury and enters into a contract to pay 2 per cent. annually on gross earnings on all business within the corporate limits the franchise will not be renewed, and the company will be compelled to cease doing business in the city and to remove its property from the streets.

The citizens are urging the council to strictly enforce its demands since the arbitrary treatment of the patrons during the earlier years of the company's occupation of the city have not been forgotten.

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THE DEADLY PARALLEL

AUTOMATICS VS. LEVERS

With **GRAY PAY STATIONS** you simply drop the coin in the slot

NO LEVERS TO PUSH OR PULL

GRAY TEL. PAY STATION CO.

HARTFORD, CONN.

OUR '07 CATALOGUE SENT ON REQUEST

FOR SALE

For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

SECOND HAND switchboards for sale—2 100 capacity Chicago Telephone Supply Co.; 1 200 capacity and 1 100 capacity Western Telephone Construction; 1 100 capacity Swedish-American; 2 50 capacity and 2 100 capacity Eureka; 1 100 capacity Standard; 3 100 capacity Keystone; 3 200 capacity and 1 100 capacity North. Address Victor Telephone Works, 6583 State St., Chicago, Ill. 817

FOR SALE, dirt cheap, 100 series 'phones, with Ericsson transmitters, Holtzer-Cabot generators and oak cabinets. Good as new. Address, R. Valentine, Janesville, Wis. 848

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WANTED—Position with telephone company on construction or instrument work. Five years' experience, best of references. Address Box 836, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 836

WANTED—Wire chief. One who has had good experience as switchboard man. In answering state salary wanted, former experience, whether married or single, and give references. Address, Merchants Mutual Telephone Company, Michigan City, Ind. 852

WANTED---Continued

WANTED—Back numbers of AMERICAN TELEPHONE JOURNAL for January, February and March, 1907. Address, stating lowest price, Box 840, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 840

WANTED—Telephone workmen; 3 foremen, 30 linemen, 6 cable splicers and 10 outside trouble men, to take places of strikers. Permanent positions at good wages for first-class men. State experience and give reference when applying. National Telephone Company, Wheeling, W. Va. 847

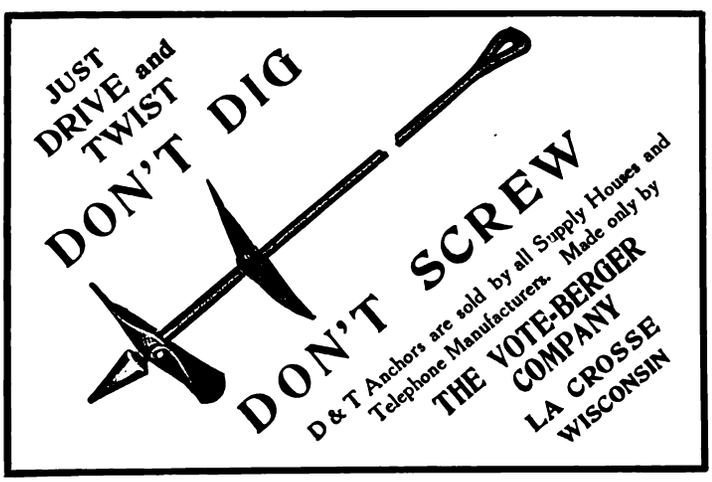
WANTED—Position as manager or superintendent of telephone exchange. Central energy or magneto. Can furnish best reference as to ability, habits, etc. Address Box 841, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 841

WANTED—Salesman for telephone instruments and supplies for New York State, Pennsylvania or the Middle West. An exceptional opportunity for the right man. Address Box 843, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York City. 843

WANTED—Position as engineer of new telephone company entering the field, or with a company controlling a system of exchanges. Can give best of references. When replying, please state salary and prospects. Address Box 849, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York City. 849

WANTED—Two first-class cable splicers at once. York Telephone Co., York, Pa. 850

WANTED—Manager system of two exchanges, 200-line and 50-line, with toll lines. Man with ambition to become part owner. Address F. H. Davis, Cuthbert, Ga. 851



SUBSCRIBER'S LEASE AND TOLL LEDGERS

Write To-day for Samples and Prices. Toll Bills. Rental Bills.

Form G-90.	For Small or Branch Exchange use; carries account for 2 years.
Form G-90-A.	For Large and Medium City Exchanges and Systems of Exchanges; the most complete form made.
Form G-90-B.	For City Exchanges having many Rural Lines.
Form G-90-C.	For City Exchanges, Rentals and Toll Charges separated.
Form G-90-E.	For Small Exchanges, Rentals only.
Form G-90-F.	For Small Exchanges, Tolls only.
Form G-90-G.	One subscriber to a sheet; carries account 4 years.
Form G-90-H.	One subscriber to a sheet; carries account 12 years.
Form G-90-I.	For Small Exchanges; Bound Books; carry 12 subscribers on a page for 1 year.

THE Edwards-Hine Co.

TELEPHONE SYSTEMATIZING DEPT.

5 and 7 PEARL STREET (EAST), GRAND RAPIDS, MICH., U. S. A.

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In the Field of Invention

TELEPHONE TRANSMITTER.

R. C. Browne, Salem, Mass., patent 854,025, May 21, 1907, assigned to J. Abbott, Winchester, Mass.

The novel feature of this transmitter is the construction of the resistance chamber. In lieu of the customary vertical electrodes, the sides of the chamber are of mica, or some other resilient, non-conducting material. The layer of granular carbon is very thin, but of great width, the increase and decrease in resistance of the chamber being accomplished by causing the layer of carbon to be alternately thickened and thinned by the vibrations of the diaphragm.

The current traverses the granular carbon in a direction perpendicular to the direction of the sound waves, the inventor claiming that a greater microphonic effect is caused by so doing.

SELECTIVE SYSTEM.

G. Babcock, Chicago, patent 853,291, May 14, 1907, assigned to S. C. Tel. Mfg. Co.

This is a system of selective ringing for magneto exchange systems. The switchboard is provided with two sets of jacks, one of which is bridged across the metallic sides of the line for signaling the instruments thus connected. The other set is bridged from line to ground through the center of the winding of a balance coil connected across the line. Two selections are made on each set of jacks by reversal of the polarity of the current, thus giving a four-party system of selection.

There is also provided, in each subscriber's station, a switch for the purpose of so arranging the connections between the instrument and the line as to allow of one subscriber signaling another subscriber on the same line without causing a disturbance of the remaining telephones on the line or of the central office operator.

PARTY LINE LOCKOUT.

G. E. Terhune, W. M. Eidson, W. B. Huston, Willow Hill, Ill., patent 854,543, May 21, 1907.

This invention describes a step by step selective party line lockout. It comprises an arrangement of three relays, four cogged wheels, an indicator and an automatic circuit closing switch, by means of which the battery impulses are sent out upon the line.

TELEPHONE SYSTEM.

W. W. Dean, Elyria, Ohio, patent 854,279, May 21, 1907, assigned to Dean Electric Co.

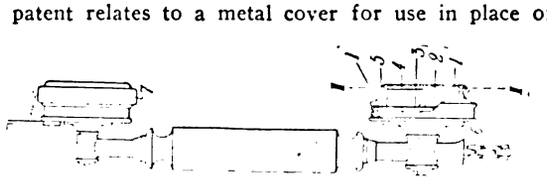
This relates to a common battery telephone system having the feature of automatically restoring subscribers' lines to their normal condition immediately upon the completion of a conversation between connected subscribers.

This is accomplished, the inventor states, by the use of supplementary cut-off relays in the cord circuits. These relays are actuated, upon the replacing of the respective receivers upon their hooks, by the action of the supervisory relays. This immediately cuts the subscribers' lines entirely free from the cord circuit apparatus, leaving the subscribers in position to make further calls, even though the operator has not removed the previous connection.

HAND MICROPHONE.

C. G. F. Holomgren and A. E. Brahn, Stockholm, Sweden, patent 841,399, Jan. 15, 1907, assigned to L. M. Erricson & Co.

This patent relates to a metal cover for use in place of the



customary transmitter mouthpiece, on hand microphones of the type wherein the transmitter 6 and receiver 7 are mounted parallel on the handle bar. The cover is imperforate on the surface but is provided with openings 4 on the edge facing the receiver through which the sound waves may pass to the transmitter diaphragm 3. The object of the invention is to preclude the possibility of entrance of saliva and other impurities into the transmitter.

CONDUIT PLUG.

W. L. McGowan, Philadelphia, Pa., patent 849,415, April 9, 1907.

This patent relates to a device comprising a plate of sheet metal *D*, to which is attached by means of the studs *F*, two

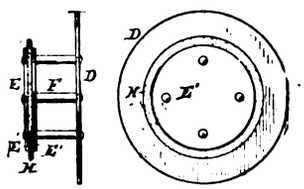


FIG. 2 FIG. 3

metal plates *E* and *E'*, between which is secured the rubber washer *H*. The object of the device is to provide a satisfactory plug for the sealing of unoccupied ducts in a conduit system, to prevent the entrance of moisture and foreign matter which might have a tendency to injure the sheathing of the cable when it is pulled in. Fig. 3 shows a rear elevation of the plug.

TRUNKING SYSTEM.

W. W. Dean, Chicago, Ill., patent 854,337, May 21, 1907, assigned to Kellogg S. & S. Co.

This patent relates to a trunking system between common battery exchanges of the two-wire type. It is so arranged as to allow the operator, at the exchange in which the calling subscriber's line terminates, to signal the called subscriber direct over the trunk, also to allow the called subscriber to signal the initial operator by the movement of his receiver hook direct without the necessity of intervention by the operator in the exchange of the called subscriber.

SPRING BINDING POSTS.

John Schade, Jr., Brooklyn, N. Y., patent 12,642, reissued April 23, 1907, and assigns to Fahnestock Electric Co.

This patent covers improvements on spring binding posts as shown in application No. 179,101, dated October 29, 1903, and illustrates eight different forms of spring clips in which the fundamental idea is the use of a single piece of resilient metal having a V shaped retaining piece so arranged as to act in opposite direction with the other end of the resilient strip and so co-acting with it that when a conductor is introduced in the retaining piece the forces working oppositely will tend to grasp it securely so as to assure of positive electrical contact between the conductor and the clip.

TELEPHONE SYSTEM.

C. D. Enochs, La Crosse, Wis., patents 854,203 and 854,204, May 21, 1907, assigned to Vote-Berger Co.

These patents relate to a common battery telephone system in which the flow of current and the resistance of the subscribers' lines is regulated by a steadying resistance or ballast. In the system described the line signal is directly in series with the central office battery, thus obviating the necessity of a controlling relay, as is customarily used.

The ballast comprises a fine wire enclosed in a sealed chamber. This wire decreases in conductivity as its temperature rises, and vice versa, the inventor claims. Which being the case, regulates the flow of current through the line signal and the subscriber's transmitter in such a manner as to provide for a uniformly efficient service.

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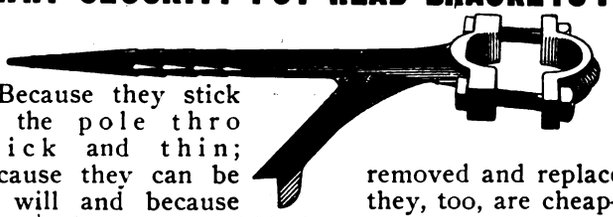
WHY NOVELTY POTHEADS AND SLEEVES?

Because here is the ONLY SUCCESSFUL, simple, safe, sightly, splicing device. Because a boy can do the work and do it well and quick. And lastly, because they are very cheap.

WHY SECURITY POT HEAD BRACKETS?



Because they stick to the pole thro thick and thin; because they can be removed and replaced at will and because they, too, are cheap—cheaper than your wood blocks.

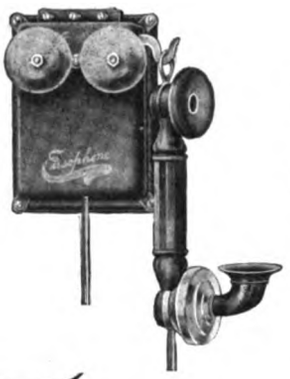
Ever have a trolley jam on the cable forty feet in the air? Ever heard of such a thing happening to **Security Trolleys?** No, sir, and the Security is the **only** trolley that will take **any** size cable. There are a dozen other details you should learn about. Get the Security Book.

(Patented.)

THE F. BISSELL COMPANY
TOLEDO, O., 226-230 HURON STREET

TOLEDO, OHIO · THE F. BISSELL COMPANY

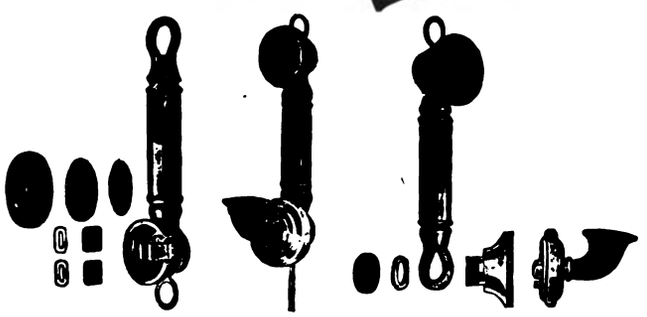
The **Subscriber sees that they are Convenient, Efficient and Attractive.**



The **Exchange Manager sees Lowest Maintenance Cost, Increase in Number of Subscribers, Demand for Hand Telephone.**

Easophones

The WIRE and TELEPHONE COMPANY of AMERICA
ROME, N.Y.



"Arrester"

"Leave not that to chance which foresight might provide for or care prevent."

Mr. DEVIL—
A WORD WITH YOU!

MASON ARRESTERS

Your business is to DESTROY.

Our business is to PROTECT.

We challenge you to combat!

SUMTER Tel. Mfg. Co.
Sumter, S. C.

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From Shops and Factories

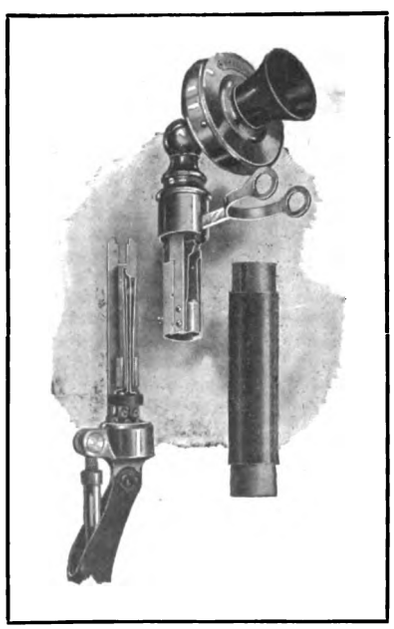
THE FLEXIPHONE A GLOBE TROTTER.

LESS than six months ago the Flexiphone was first called to the attention of the public through the columns of THE AMERICAN TELEPHONE JOURNAL, and now these instruments are in use in nearly every state in the Union. You will find them in Mexico, in South America and in Europe. It is seldom that a new device "catches on" with the public, and especially with the technical public, as has the Flexiphone, and the fact that it has done so, would indicate that it has points of merit and that these points are real and strong are quickly apparent.

The Flexiphone was designed to eliminate, first, trouble and expense due to breakage and kinking of the conductor cords; second, to better the service to the subscriber by having a telephone that would be quickly accessible to any one sitting or standing, and yet always out of the way. This instrument seems to accomplish both of these ends without encumbering the old standard type of telephones with a lot of mechanism, being in itself a simple, neat and graceful device which is complete.

Flexiphone in Residence, Acting Not Only to Support but to Adjust Transmitter to Any Position.

The greatest field for this instrument would seem to be in the business office, yet experience has demonstrated that the Flexiphone is also well adapted to the private home. The user of a Flexiphone in a residence does not have to stand with a heavy telephone in one hand and a receiver in the other, and drop both in her haste to jot down a message; nor does she have to buy a $10 table on which to set the telephone, or get a wall telephone and climb on a hassock should she be a little short. The Flexiphone takes care of all these conditions and all these troubles without any fuss or feathers, and does not get in anybody's way in doing it.



Flexiphone Separated to Give Access to Wiring.

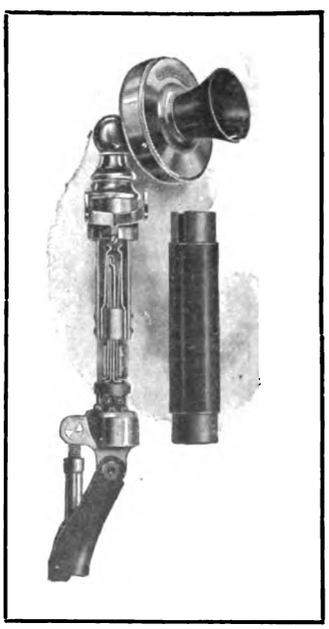
Apart from its handiness, the Flexiphone has features of construction and design that deserve mention from the electrical standpoint. The accompanying illustrations show the Flexiphone taken apart (and this is done by the removal of only one screw), and again with the electrical parts reassembled, only the outside casing remaining to be put on. In the last view all the parts are in operative relation with spring contacts, cord connections, etc., in full view for inspection and location of trouble. These cord connections are made to a flat hard rubber terminal block, securely fastened to the frame on which the switch springs are mounted. The contact springs are of German silver, with pure platinum points arranged to make long sliding contacts when the sections are reassembled by the inspector or trouble man. The switch hook is independently supported and operated by an auxiliary steel spring, permitting the full elasticity of the contact spring to be exerted in making perfect connections. The transmitter is mounted on a special head adapted to rotate in a horizontal plane through an arc of 60°, and differs from other solid-back types in having a hermetically sealed receptacle for the electrodes and granular carbon, precluding any ill effect due to humidity or adverse atmospheric conditions. All of the electrical parts are entirely insulated from the metallic frame, avoiding among other things the possibility of danger or accident from current at an abnormally high voltage.

The receiver is the standard American bi-polar pattern.

The makers of this instrument, the Oliver Mfg. Co., Philadelphia, Pa., are prepared to supply the Flexiphone either for central energy, series or bridging work, and to supply all the accessories for such work, such as generators, ringers, etc. As a money saver and business getter the Flexiphone is said to be coming up to all expectations, and is a device that should be thoroughly investigated by every one interested in the telephone business.

W. O. RHODE TO MANAGE CENTURY'S KANSAS CITY BRANCH.

THE Century Telephone Construction Co., of Buffalo, N. Y., has located its branch office in Kansas City, Mo., at 408 Delaware street. This office will be in charge of Mr. W. O. Rhode, who was formerly manager of the Kansas City branch of the Swedish-American Telephone Co.



Access to Switch Contacts May Be Had by Simply Removing Tube.

STROMBERG-CARLSON TELEPHONE MFG. COMPANY, Rochester, N. Y., has prepared an exceptionally attractive book, entitled "How the Telephone Helps the Farmer." It should be extremely useful to those who are engaged in promoting rural line development. The first chapter gives a comprehensive summary of the features of telephone service which are especially useful to the farmer. This is followed by a telephone story, which drives some of the points home in a pleasing fashion. Other parts of the book tell how to interest neighbors to organize farmers' lines, giving the cost of building and information which will be useful in the selection of telephones.

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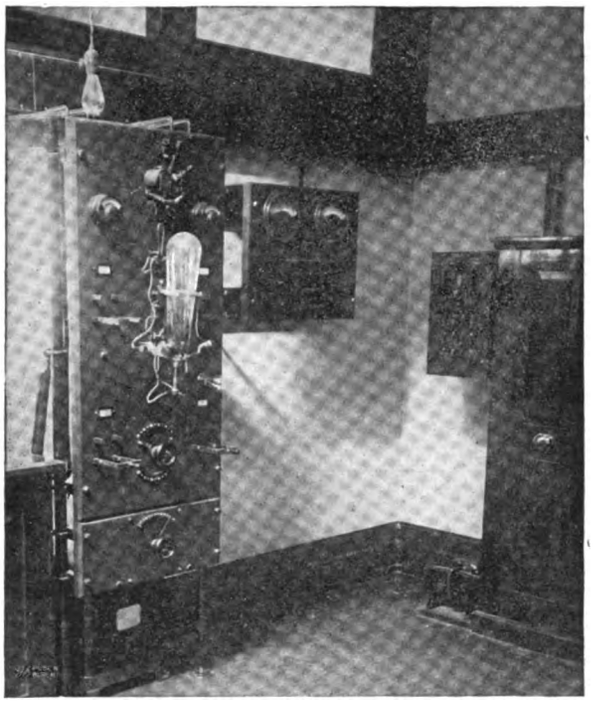
General Electric Company

MERCURY ARC RECTIFIERS

Are Easy to Understand and Easy to Manage

Automobile owners safely let coachmen charge their storage batteries with mercury arc rectifiers. No electrical experience is necessary.



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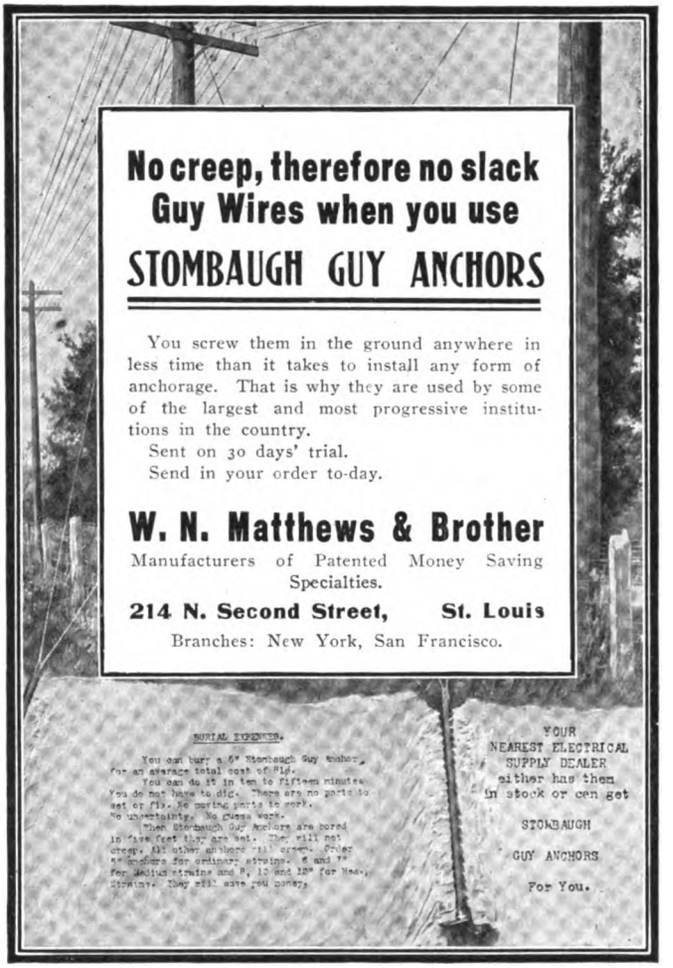

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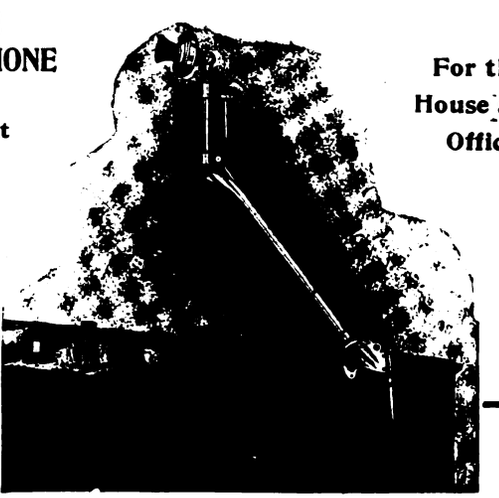

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Good News—and It's All New

NEW COMPANIES.

ALMA, CAL.—The Alma Telephone Company has been organized with the following officers: President and manager, Ed. Frank; vice-president, Geo. Osmer; treasurer, C. Hoult; secretary, A. Hueter.

WOLFLAKE, IND.—The Farmers' Mutual Telephone Company has been organized, and has commenced the construction of its system. Connections are to be established with the Farmers' lines in Whitley county.

ZENAS, IND.—The Zenas Independent Telephone Company has filed articles of association with the Secretary of State. The capital stock is placed at $2,500, and it is the company's intention to build an exchange in Zenas, and extend lines throughout portions of Jennings and Decatur counties. Lafayette Speer has been elected president; and John J. Hulton, secretary.

BAGLEY, IA.—The Bagley Mutual Telephone Company, with a capital stock of $9,990, has been incorporated.

LANYON, IA.—Articles of incorporation have been filed by the Lanyon Mutual Telephone Company, Lanyon, Ia. It has an authorized capital stock of $5,000, and the incorporators are G. T. Paterson, J. Albert Anderson, Gust. Burman, J. A. Brown, Edward Peterson, D. E. Carlson, Limas Goodale and I. L. Reedholm.

PERSIA, IA.—The Persia Mutual Telephone Company of Persia, Harrison County, has been incorporated with a capital stock of $10,000. Among the incorporators are E. C. Campbell, H. A. Moss, I. W. Evans, W. V. Hilbron, M. H. Baker and others.

FALL RIVER, KAS.—A farmers' telephone company, to be known as the Greenwood Telephone Company, has been organized west of Fall River, and the following officers elected: N. Crawford, president; Wm. Woods, vice-president; Alec West, secretary, and Andy Sharp, treasurer.

COLFAX, LA.—An Independent telephone company, whose intention is to construct a line from Colfax to Cloutierville, is being organized at this city. Among those interested in the enterprise is M. M. Mandott.

FAIRMONT, MINN.—A new telephone company, which is to be called the Independent Farmers' Line, has been organized, and will connect its lines with the exchange at Fairmont. The officers of the newly organized company are: Julius Simon, president; Earl Prentice, secretary; John A. Hiller, treasurer; Henry Benck, P. Berndt, James McNerny and J. A. Manley, directors.

BRANDON, MISS.—Articles of incorporation have been filed by the Brandon & Daniel Telephone Company, of Brandon, Rankin county. It has an authorized capital stock of $10,000, and the incorporators are V. H. Russell, H. A. Jones, W. H. Patrick and others.

NORMAN, NEB.—The Kearney County Independent Telephone Company has been organized with a capital stock of $15,000, fully paid up, and the following officers elected: President, A. M. Anderson; vice-president, I. H. Slater; secretary, J. F. Barnes; treasurer, G. P. Kingsley.

TIOGA, N. D.—The Tioga Farmers' Telephone Company, of Tioga, N. D., has been incorporated with a capital stock of $8,000. Among the incorporators are A. Stakston, J. Izaacson, W. H. Dixon and others of this city.

HIGGINSPORT, OHIO.—Articles of incorporation have been filed by the Higginsport Independent Telephone Company of this city. It has an authorized capital stock of $10,000, and Charles B. Williams is among the incorporators.

GUTHRIE, OKLA.—Articles of incorporation have been filed by the Guthrie, Camp Russell and Northeastern Rural Telephone Company of Guthrie. It has an authorized capital stock of $1,300, and the incorporators are Shelton Morris, T. L. Hutchinson and Fred Storm, of Guthrie.

KELL, OKLA.—The Kell Telephone Company, of Kell, has been incorporated with a capital stock of $5,000. The incorporators are P. E. Stomans, F. J. Hausen and John H. Hausen.

POND CREEK, OKLA.—An Independent telephone company, to be known as the Pond Creek Mutual Telephone Company, has been organized by the business and professional men of this city, and sufficient stock subscriptions secured to warrant the organizers beginning the construction of the plant at once. It is the company's intention to install a system at Pond Creek, and to co-operate with the farmers' lines of the county.

TRIBBEY, OKLA.—The Tribbey Telephone Company, with a capital stock of $500, has been incorporated by A. M. Tribbey, C. C. Bailey, D. J. Abbott, J. W. Forster, J. M. Lamm and W. J. McBryde, of Tribbey, and M. A. J. Ticer, of Moral.

EAST BRADY, PA.—The Central Allegheny Valley Telephone Co., East Brady, has filed articles of incorporation. The capital stock is placed at $8,000, and the following directors have been elected: R. A. Thomas, C. Hemmer, F. Ludwick, J. W. Hill, C. P. Graham, East Brady; E. D. Jennings, W. J. Mildren, E. M. Quenn, Queenstown.

FREDERICK, S. D.—The Forbes Rural Telephone Company of this city has been organized, and work on its system will be commenced at once. A branch line to Ellendale is also to be built.

HOUSTON, TEXAS.—Articles of incorporation have been filed by the Central Texas Telephone Company. It has an authorized capital stock of $50,000, and the incorporators are A. B. Foster, W. E. Richards and H. B. Houston.

COX'S LANDING, WEST VA.—The Cabell-Mason Telephone Company, of Cox's Landing, has been incorporated with a capital stock of $5,000. The incorporators are R. F. Brammer, N. J. Cox, Cox's Landing; H. V. Sauns, Sesage; H. W. Carson, Laclede; Azel McCurdy, Huntington.

SUPERIOR, WIS.—Plans for the organization of a co-operative farmers' telephone company are being considered by the farmers of Superior. It is proposed to build a line from this city to Black River Falls, Amnicon Lake and other parts of the county, connection being made with the People's company in the city.

TOLEDO, ONT., CAN.—The Rural Telephone Company, of Toledo and Frankville, has been organized and has commenced the construction of its line between the two cities. It is the company's intention to erect lines to many of the neighboring towns and villages.

FRANCHISES.

GREEN FOREST, ARK.—A franchise to install a telephone system at this city has been granted by the City Council to the Farmers' Union Telephone Company.

ROCKWELL, IA.—The Rockwell Farmers' Telephone Company has been granted a twenty-five year franchise at Rockwell.

VENANGO, PA.—A franchise has been granted to C. G. Mead, special agent of the Meadville Telephone Company, of Meadville, for the installation of an Independent exchange at Venango. Arrangements have been made by him with the Eastern Crawford Telephone Company and Meadville Telephone Company whereby subscribers to the Venango Exchange are to have service with the subscribers of the above named companies without extra charge. This service is to be installed and operated by Mr. Mead personally, and is not to be a part of either the Meadville or Eastern Crawford Company's holdings.

ROCK HILL, S. C.—Application for a twenty-five year franchise has been made by the Rock Hill Telephone Company, whose intention it is to install a common battery system at this place.

SENECA, S. D.—The Seneca Telephone Exchange Company has been granted a franchise by the town board of Seneca, and work on the construction of its system will be commenced at once.

GALVESTON, TEXAS.—The South Texas Telephone Company has applied for a franchise to build additional lines in Galveston.

NORTH YAKIMA, WASH.—The Independent Telephone Company, represented by J. P. Reed, of Seattle, expects to apply for a franchise at this city. It is the intention of the company to make North Yakima the headquarters for Eastern Washington, and to extend the system throughout the district, connecting with long distance systems.

WITTENBERG, WIS.—Application for a telephone franchise has been made by John Eckhoff at this city.

EAST TORONTO, ONT., CAN.—The town council of this city has decided to grant a franchise to the Independent Telephone Company, which now operates in York, Markham, Scarboro, etc., and it will soon begin the installation of its system at this place.

FINANCIAL.

PASADENA, CAL.—The directors of the Home Telephone Company have declared a dividend of $1.00 per share on all the capital stock, payable July 15th.

EAST HAVEN, CT.—The capital stock of the East Haven Telephone & Electric Company has been increased from $3,000 to $5,000. The additional capital will be used in the improvement of its system.

LAWRENCEVILLE, ILL.—The Citizens' Telephone Company has increased its capital stock from $20,000 to $40,000.

PLEASANT HILL, ILL.—The Farmers' Mutual Telephone Company has increased its capital stock from $2,500 to $20,000.

MADISON, IND.—The capital stock of the Madison Telephone Company has been increased by the issuance of $50,000 of preferred stock.

DELTA, O.—The capital stock of the Cass County Home Telephone Company has been increased from $9,750 to $150,000.

WANTED—SPECIAL CORRESPONDENTS

OWING to the rapid growth of the Independent telephone movement in all sections of the country, we have openings for special correspondents in every State to work in conjunction with our already efficient corps. Matter similar to that in our Message and Operating Field pages is especially desired. For details address the Editor.

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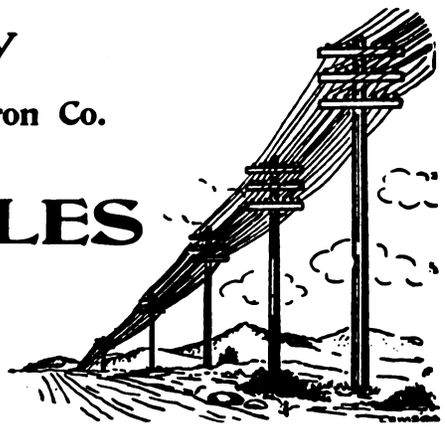

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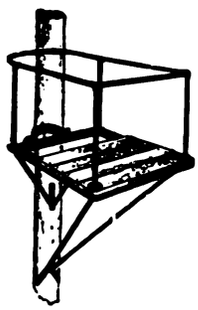

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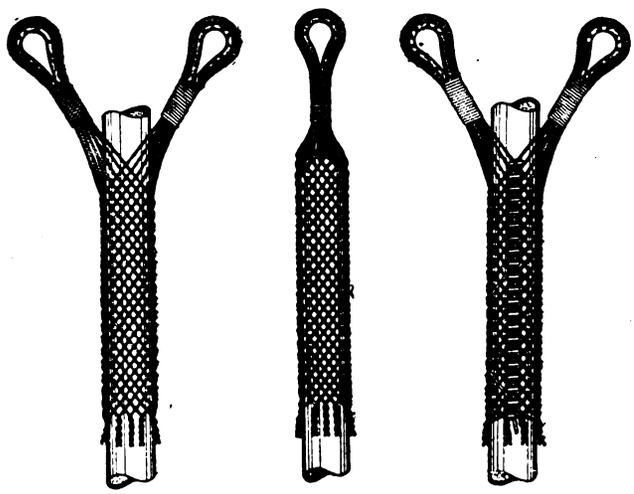

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Good News—And It's All New

WINDSOR, O.—The Windsor Telephone Company has increased its capital stock from $1,500 to $1,875.

COLUMBIA, TENN.—At a recent meeting of the Citizens' Telephone Company it was decided to increase the capital stock from $18,000 to $50,000, the additional stock to be used in rebuilding its plant. The company, which already has exchanges at Mt. Pleasant, Florence and a number of other places, is considering the advisability of establishing sub-exchanges all over the county.

HALIFAX, N. S., CAN.—The Nova Scotia Telephone Company has decided to increase its capital by $200,000 for the purpose of building extensions. The company proposes to call up 50% of this, which will be offered to shareholders at par, one share for each four now held. This will make the capital of the company $900,000.

ELECTIONS.

OMAHA, NEB.—The following officers and directors have been elected by the new Independent Telephone Company of Omaha: U. S. Grant, Jr., San Diego, president: F. H. Stow, vice-president; F. S. Graves, secretary; and C. E. Bittinger, treasurer. Directors: W. F. Ely and F. H. Stow, of Omaha; U. S. Grant, of San Diego.

COHOES, N. Y.—The Cohoes-Waterford Home Telephone Company has elected the following officers and directors: President, J. H. Shine; vice-president, I. H. Griswold; secretary-treasurer, Geo. R. Wilsdon; directors, J. H. Shine, F. W. Kavanaugh, I. H. Griswold, F. H. Sudro, T. M. Brush, Thos. Breslin, G. H. Fitts, P. H. Andrae, Howard Hendrickson, H S. Greene and E. F. Allen.

ROCHESTER, N. Y.—The following officers were elected at the annual meeting of the directors of the Independent Telephone Securities Company: President, George R. Fuller; vice-president, E. W. Peck; secretary, Roy C. McCann; treasurer, Fred W. Zoller.

WAYNE, N. Y.—The Wayne-Monroe Telephone Company has elected the following officers and directors: President, Geo. F. Waters; vice-president, Ledyard S. Cuyler; secretary-treasurer, Judson L. Transue; general manager, John A. Driscoll; directors, Geo. Waters, Pultneyville; Ledyard S. Cuyler, Lyons; Judson L. Transue, Williamson; F. D. Gaylord, Sodus; Dr. Morris, Lincoln; J. A. Driscoll, Rochester, and Geo. R. Miles, Wolcott.

FARGO, N. D.—The following officers have been elected by the North Dakota Independent Telephone Association: President, A. B. Cox, Valley City; vice-president, W. F. Baillie, Hunter; secretary-treasurer, John Carmody, Hillsboro.

MISCELLANEOUS.

LAKE BUTLER, FLA.—The name of the recently organized Independent telephone company at this city is the Lake Butler Telephone Company. It is its intention to commence the construction of its system at once.

SPRINGFIELD, MO.—It is the intention of the Minneapolis capitalists who have taken over the stock and equipment of the Home Telephone Company to organize a stock company with a capital of $400,000 and to build a thoroughly up-to-date system in Springfield.

NORFOLK, NEB.—The City Council of Norfolk is considering the proposition of establishing an independent telephone system in this city.

ELY, NEV.—The White Pine Telephone Company has perfected arrangements for connecting the White Pine Company's lines with the lines of the Utah Independent Telephone Company, giving Ely direct communication with Salt Lake City. Later connections will be established with Tonopah and thence to Reno.

STEAMBURG, N. Y.—The Seneca Independent Telephone Company, which was recently incorporated at Red House, is to have its principal place of business at Steamburg, N. Y. The company has purchased of the East Randolph Telephone Company, of which Rollin Dow is manager, all of the latter's interests south of Price Corners, and the lines have been extended through Lebanon, the Bunker Hill district and to Red House. A line is to be built to Freck's Mill by way of Tunesassa. The property is being overhauled and the line put in first class condition.

ALLENTOWN, PA.—Negotiations are under way by which the Consolidated Telephone Company of Allentown is to purchase the Tri-State Telephone Company of Uniontown, in Fayette, Green and Westmoreland counties. The Tri-State Company is capitalized at $250,000.

With the Builders

FT. SMITH, ARK.—The telephone line between Fort Smith and Paris, owned by J. S. Cotner and J. W. Biggerstaff, is being rebuilt.

YELLVILLE, ARK.—The Ward Telephone Company is soon to commence the construction of its system which will connect Yellville, Cotter, Harrison, Marshall and Leslie, with an additional line at Branson, Mo.

EAST HAVEN, CONN.—It is the intention of the East Haven Telephone & Electric Company to greatly enlarge its plant and extend its service.

LAMAR, COLO.—The Lamar-Springfield Telephone Company is building lines to Carrizo and Kenton.

KEOKUK, IA.—Work on the construction of its new exchange building has been commenced by the Mississippi Valley Telephone Company.

ORIENT, IA.—A telephone line is being constructed by the Town Telephone, Light and Traction Company.

HOWARD, KAS.—About $20,000 has been expended by the O. B. Walker Telephone Company in the improvement of its system.

EAST HEBRON, ME.—The East Hebron Telephone Company has been organized, with the following officers: A. M. Fogg, president; A. F. Eastman, vice-president; F. B. Keene, secretary and treasurer; A. F. Eastman, general manager; I. F. Saunders, Ora P. Brown, Alton S. Keene, F. B. Kum and A. M. Fogg, directors. They will begin construction work at once from South Buckfield to East Hebron, thence to Hebron Station.

S. W. HARBOR, ME.—The Island Telephone Company will begin the construction of fifty miles of metallic circuit at once. It will install 130 telephones and a 100-drop switchboard. Mr. A. M. Fogg, of East Hebron, Me., has been elected superintendent of construction and will enter upon his duties in this connection immediately.

TORREON, MEX.—The Woesner Telephone Company, owned by J. Woesner, has just completed lines to Gomez, Palacio, Lerdo and Matamoras.

ROCKLAND, MICH.—Lines from Rockland to Ewen are being constructed by the Ontonagon County Telephone Company.

FAIRMONT, MINN.—The Banner Line Telephone Company is building lines east from Fairmont, which will connect with several other rural lines.

JACKSON, MINN.—Construction work is being carried on by the Middletown Telephone Company on its system.

MESABA, MINN.—The Mesaba Telephone Company is planning to establish an exchange at Bovey, giving service to Bovey, Grand Rapids and Windom.

TROY, MO.—The lines of the Troy Telephone Company are being extended.

AVOCA, N. Y.—Among the improvements planned by the Overland Telephone Company is the extension of its lines direct to Bath.

FULTON, N. Y.—The Oswego County Independent Telephone Company is installing its plant at this city. A long distance line is being erected to Syracuse; an exchange is also to be established at Phoenix, and connections are to be made with the Pennellville Independent Telephone Company whereby the Oswego County Independent Company will furnish long distance connections for the Pennellville subscribers.

COSHOCTON, O.—It is the intention of the Citizens' Telephone Company to build a metallic circuit between Coshocton and Millersburg, and also between Warsaw and Millersburg.

LOGAN, O.—A line from South Perry to this city is being erected by the Citizens' Telephone Company.

NEW BREMEN, O.—Rural lines to the north and northwest of New Bremen are to be built by the New Bremen Telephone Company.

ALLENTOWN, PA.—To take care of its increasing business the Consolidated Telephone Company expects to install two additional circuits between Allentown and Bethlehem.

ROSCOE, PA.—The Roscoe Telephone Company, recently incorporated, contemplates commencing the erection of its lines from Roscoe to Stockdale, through Allen township to Allenport, thence to Vesta mines and to Speers borough. A line is also to be built to Long Branch, with branches extending to and connecting with other boroughs and villages.

ABILENE, TEXAS.—Many improvements in its plant have been made by the Roberts Telephone and Electric Company, including the installation of a new switchboard and the stringing of a number of miles of cable.

CRANBROOK, B. C., CAN.—The Cranbrook Electric Light Company is preparing to build a long distance telephone system throughout the Rocky Mountains to connect with the system being built by the Alberta government on the eastern side of the mountains.

ST. MARTINS, N. B., CAN.—The St. Martins Telephone Company expects to extend its lines to Ten Mile Creek.

UNDERGROUND.

SAN FRANCISCO, CAL.—The underground system of the Home Telephone Company is being installed.

ANACONDA, MONT.—The new Independent Telephone Company is soon to commence the installation of its underground system in this city.

MINNEAPOLIS, MINN.—Permission to make changes in its underground system has been asked by the Tri-State Telephone & Telegraph Company.

ITHACA, N. Y.—The Ithaca Telephone Company expects to commence the laying of the conduit for its system at Cornell University.

FARGO, N. D.—The North Dakota Independent Telephone Company is to place some of its wires underground in this city.

NASHVILLE, TENN.—Considerable conduit work is to be done by the Home Telephone Company at Nashville.

RACINE, WIS.—The Citizens' Telephone Company expects to conduct some additional conduit work.

TOMAHAWK, WIS.—Among the improvements planned by the Electric, Water and Telephone Company is the extension of its cable system.

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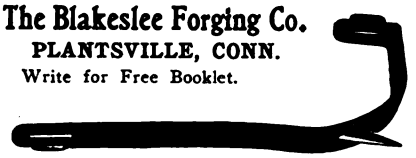

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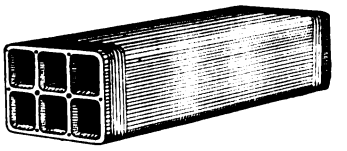

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FOR UNDERGROUND WORK
AMERICAN CONDUIT CO.
Write for our Engineering Data Bulletins. 140 Nassau St., New York. 501 Marquette Bldg., Chicago. Los Angeles, Cal.

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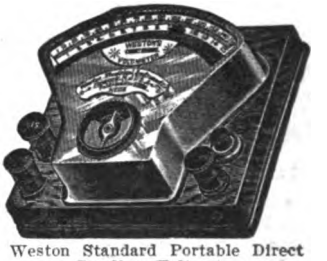
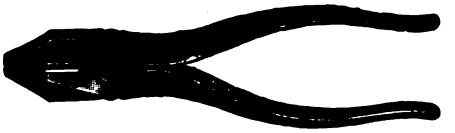
McMEEN & MILLER
ENGINEERS: CONSTRUCTORS
Telephone and Telegraph Properties
MONADNOOK BLOCK CHICAGO

WESTON
STANDARD PORTABLE DIRECT READING
VOLTMETERS, AMMETERS, MILLIVOLTMETERS, VOLTAMMETERS, MILAMMETERS, OHMMETERS, PORTABLE GALVANOMETERS, GROUND DETECTORS AND CIRCUIT TESTERS.
Our Portable Instruments are recognised as THE STANDARD the world over. Our STATION VOLTMETERS AND AMMETERS are unsurpassed in point of extreme accuracy and lowest consumption of energy.
WESTON ELECTRICAL INSTRUMENT CO.
Main Office and Works, Waverly Park, NEWARK, N. J.
London Branch—Audrey House, Ely Place, Holborn.
Paris, France—E. H. Cadiot, 12 Rue St. Georges.
Berlin—European Weston Electrical Inst. Co., Ritterstrasse, No. 88.
New York Office—74 Cortlandt Street.

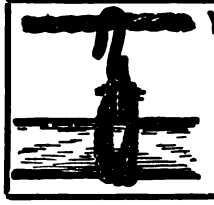


Weston Standard Portable Direct Reading Voltmeter.

BEWARE OF IMITATIONS



For the protection of our customers we advise that Klein's Pliers are being imitated to LOOK LIKE KLEIN'S. This, however, does not make them Klein's. CAUTION Look for this stamp, M. KLEIN & SONS, on the inside of handles—NONE are genuine without this stamp.
Use only genuine Klein's. They are the product of years of experience and have stood the test of time.
MATHIAS KLEIN & SONS · CHICAGO, ILL.



You Should Know that Marline makes the Best Cable Hanger —and that Security Marline is the Best Marline!
How do we know? Because we've seen the results—because we know how good we make Security hangers, and because customers tell us so. Will you be shown? Prices are low.

THE F. BISSELL COMPANY, TOLEDO, O.
226-230 Huron Street

LOOKING FOR TROUBLE?

Suppose you have a line in trouble—grounded or open. You don't know the exact location, but you send out a troubleman to hunt it up and clear it. It may take him an hour or a day. Meanwhile the subscriber is getting hot under the collar and saying things about telephones in general and yours in particular.
If you have a Pignolet voltmeter or volt-ammeter you can determine the approximate location and also get an idea of the nature of the trouble. With the information your troubleman can find the fault in jig time, and you will have prevented the subscriber kicking by giving him service at the earliest possible moment.
Does it pay to be informed? You ought to know.
LOUIS M. PIGNOLET, Originator of the Voltmeter Habit
78 CORTLANDT ST., N. Y.

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The Smallest Magneto Telephone

DIMENSIONS.

Width	5 inches
Depth	4 inches
Height	7¼ inches

The Wesco Long Distance Residence Telephone Model No. 51 is the smallest and most compact Magneto Telephone made.

It is especially designed for use in residences where wall space is limited and where ornamental design and beauty of finish are as essential as the efficiency of the working parts.

It is equipped with our Standard Receiver, Hook-Switch, Long Distance Solid back Transmitter, 80 ohm ringer and 3-bar Generator, each part being the best that money can buy. It is also made with 4-bar Bridging Generator with 1,000, 1,600 and 2,000 ohm ringer movement.

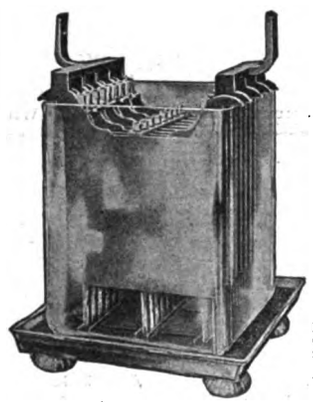
Write for General Telephone Supply Catalog and our monthly net price list.

"EVERYTHING ELECTRICAL"

THE WESCO SUPPLY COMPANY

Branch Warehouse:
Ft. Worth, Texas

St. Louis, Missouri



Gould Telephone Storage Batteries

Have clearly asserted their superiority, not only over all forms of primary batteries, but over other types of secondary batteries, in the following important particulars:

No loss of initial capacity.
Infrequent renewals of plates.
Minimum care and attendance.
Long life and low maintenance costs.

Every claim for the efficiency and economy of the Gould Telephone Storage Battery has been established by the records of the many plants in satisfactory operation.

Write for our new Telephone Battery booklet.

SALES OFFICES
Boston—89 State St.
Chicago—Rookery Bldg
San Francisco—Monadnock Building
Toronto, Ont.—62 Wellington St., West

Gould Storage Battery Co.

MAIN OFFICES
341-347 Fifth Avenue, New York City
Works, Depew, N. Y.

IMPROVE YOUR PAY

stations' service by equipping them with POOLE Lock-Outs. When one station is in use your long distance service won't be spoiled by having someone "butt in" at another station on the same line.

Particulars for the asking. Write for Booklet AL-2.

MOUNTAIN STATE ELECTRICAL CO.,

WHEELING, WEST VA.

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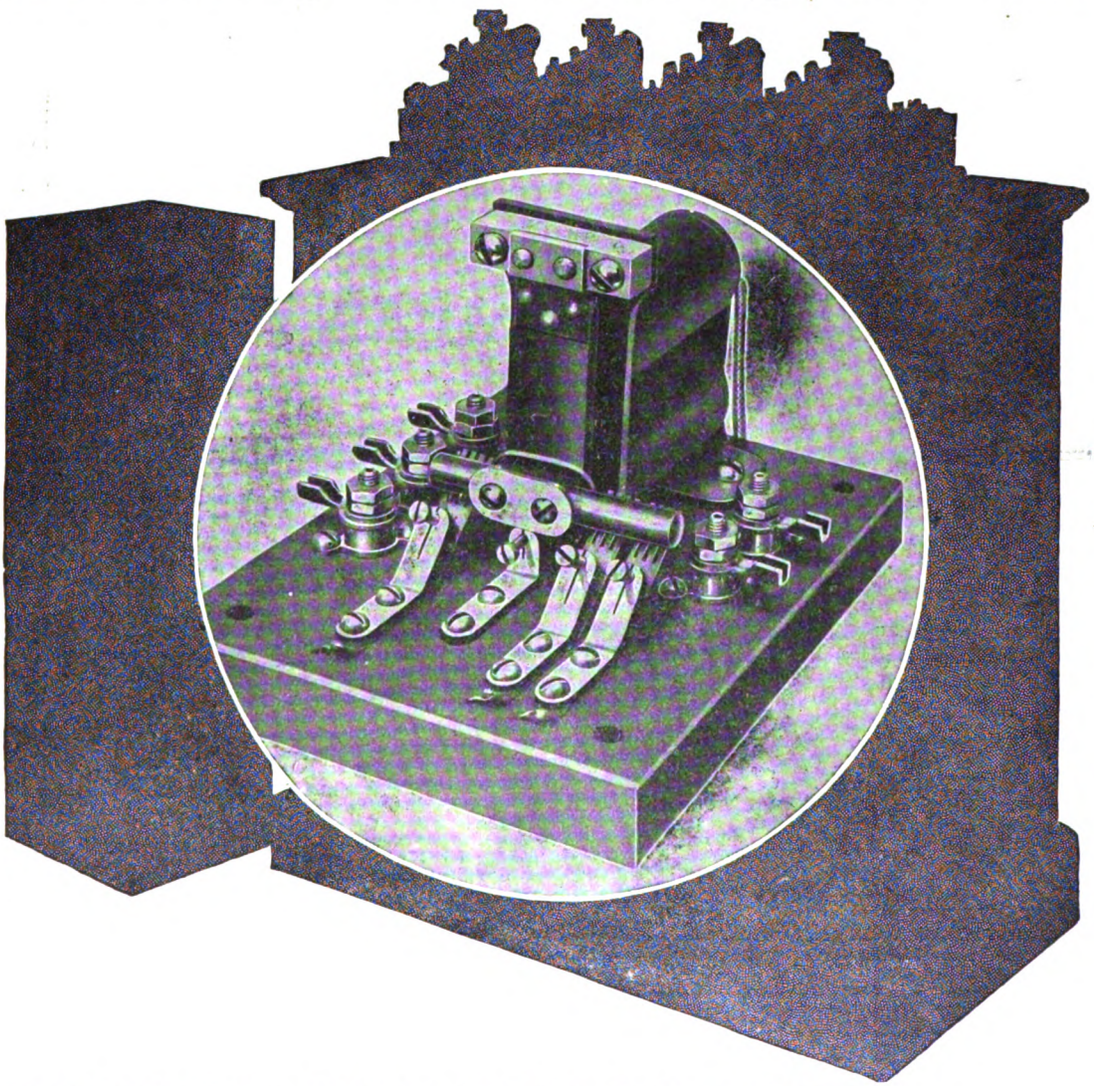
DEAN TELEPHONE APPARATUS

A Dean Electric Detail--Harmonic Converter Relay for Starting the Selective Vibrators



This Primary Circuit Closing Relay in our Harmonic Converter is for closing the circuits of the transformer primaries of the Dean Harmonic Converter, and is especially designed for small exchanges where dry cells are used for the ringing current. A minimum current consumption is imperative for party line selective signaling in the small exchange. This relay, operated by a circuit extending to special contacts on the ringing key at the switchboard, is entirely automatic, not in any way depending on the operator for its prompt and accurate action. It actually starts the selective vibrator and consumes absolutely no current except during the period that the operator is ringing the subscriber. Our folder No. 5 should be in your possession if you wish to have your selective ringing knowledge complete.

FACTORY AND GENERAL OFFICE, ELYRIA, OHIO
BRANCH OFFICE, Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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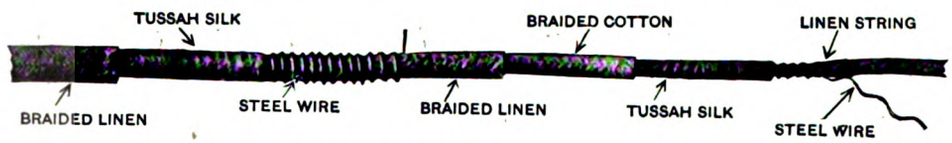
"STROMBERG-CARLSON"
STEEL SWITCHBOARD CORDS

After examining and experimenting with every possible construction for Steel Cords—testing each against the other for conductivity, durability, flexibility—you learn how the cord that gives the most satisfactory service should be made. With the benefit of such experience we naturally feel, with a degree of security, which only comes with the knowledge in knowing you are right, that we offer the most practicable and satisfactory cords for switchboard equipment.

The best construction depends greatly upon good materials. Stromberg-Carlson Cords of the smallest diameter will "live" as long as those of larger diameters, because we use a selected quality, size and strength of thread and wire for each size cord, which was determined experimentally. Furthermore we personally supervise the important operations of selecting, sorting and cleaning all materials which are purchased and "finished" in our Rochester factory for final use.

The illustration following is of one size of our two-conductor Steel Switchboard Cord. Notice the different materials used—the strength in this construction is unequaled.



CORD TIPS

The cord tips furnished with our switchboard cords are designed for service. The No. 16 is hook-shaped so that it will *hang* on the cord fastener and does not require one hand to hold it in place while the other is engaged in operating the screw driver. All "Stromberg-Carlson" Cord Tips are "crimped" on the *bare conductor* of the cord end and in addition *soldered.*

No. 16
Cord Tip for
Switchboard Cords

The Stay Cord is a continuation of the external braiding fastened securely with a metal band "crimped" on.

No. 13
Stay Cord Tip for
Switchboard Cords

OPTION

We offer these cords in 5 ft., 6 ft., 7 ft., 8 ft., and 10 ft. lengths of two and three conductors for any diameter plugs.

Have some put in your switchboard at once and get the best service.

STROMBERG-CARLSON TEL. MFG. CO.
ROCHESTER, N.Y. CHICAGO, ILL.

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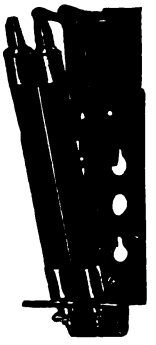
UNIT TYPE MOUNTED LINE FUSE

Mounting Plate is made up of pressed steel on which is mounted the German silver springs insulated by hard rubber blocks.



Protection is made up in units of one pair each equipped with fuses and carbons or fuses only.

The Fuses are of the snap in type, easy to take out, made 1, 2½ or 5 Amperes.

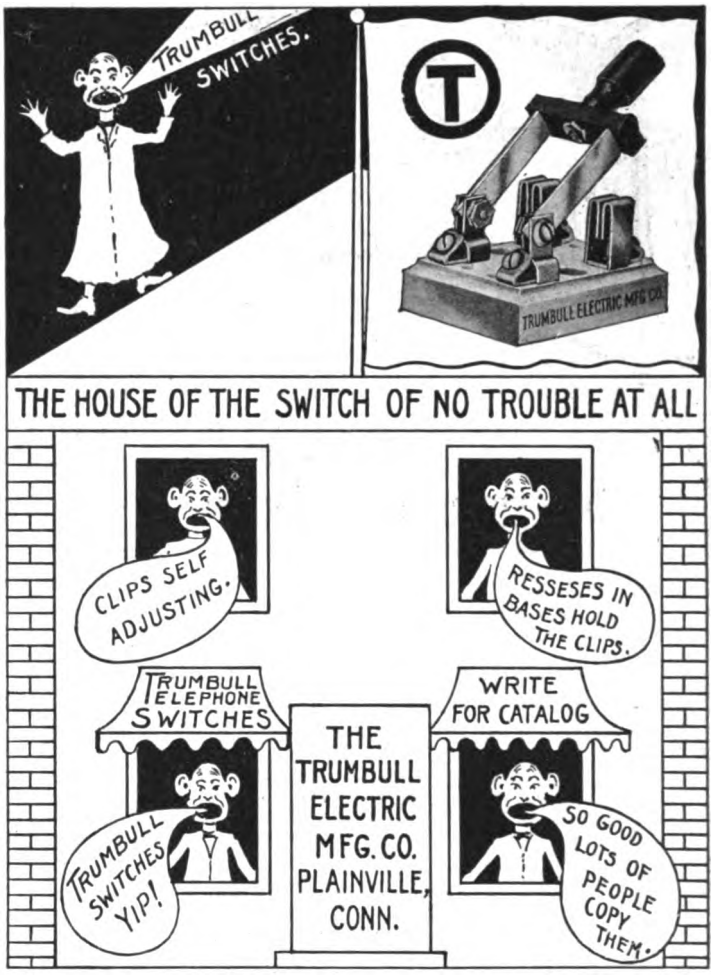
The units are held on frame or strip by two screws making it easy to replace or change location.

Sterling "GOOD GOODS"

No. 263

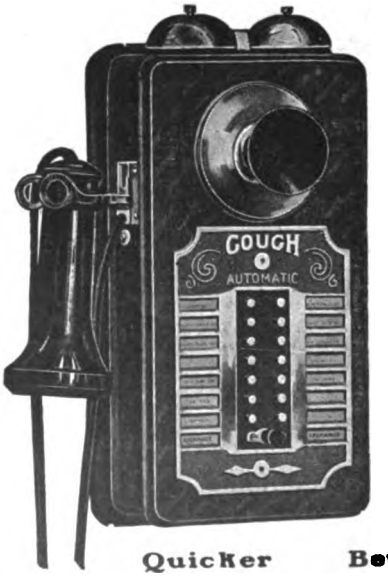
Equip your pole houses with the mounting strips and put on the protectors as required

STERLING ELECTRIC CO.
La Fayette, Ind.



Push The Button

For connection with any other station or with the central office.



Couch Automatic Reset Intercommunicating Telephones

offer the only practical solution to the private branch exchange problem. Each station may secure connection with any other station or the central office without the necessity of a branch operator.

Quicker Better Cheaper

S. H. COUCH CO., Inc., Manufacturers
156 PURCHASE STREET, BOSTON, MASS.

Western Sales Office:
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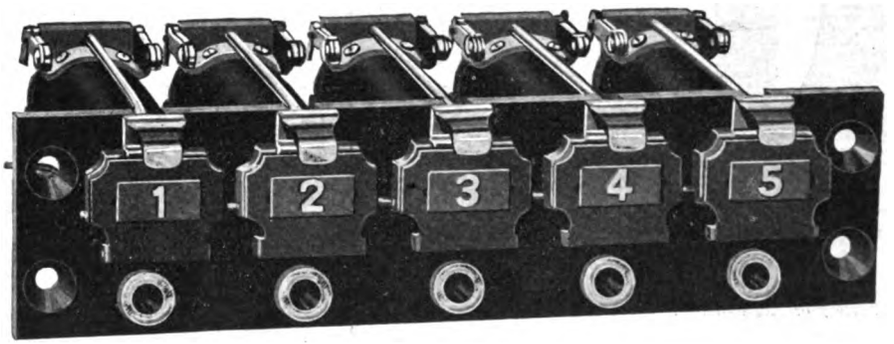
CENTURY
100% GOOD

One of Our Specialties
4-PARTY SELECTIVE RINGING
MAGNETO AND COMMON BATTERY

Write us for description and prices

We manufacture the most complete line of telephone apparatus in the world



OUR SELF RESTORING DROP WITH REMOVABLE COIL FEATURE EXTREMELY SIMPLE AND RELIABLE

CENTURY TELEPHONE CONSTRUCTION CO.
BUFFALO, N.Y., U.S.A.

TORONTO BUFFALO KANSAS CITY

Please mention THE AMERICAN TELEPHONE JOURNAL when writing to ADVERTISERS.

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All Kollogg Telephone Parts

Are Made From the Best Grades of Material and Are Carefully Assembled by Skilled Workmen, Thus Making Everything High-Grade Throughout

Kellogg Portable Desk Telephone,
For Central Battery or Magneto Use.

The tubular hard-rubber covered standard, with hollow brass shell, nickel plated base, is distinctively KELLOGG.

The transmitter hinges at top of standard, and there is mounted in base the hook switch and hard-rubber terminal block for receiver and desk stand cords.

The hook switch is of the toggle joint type, having a long motion of the springs, thus obtaining most excellent contacts with only a minimum motion of hook.

All necessary parts are properly insulated, are easy of access and everything is made as nearly dust proof as possible.

THIS IS WHY

The Standard of Excellence Is Always Maintained By Kellogg Apparatus

Correspondence Solicited **Prices Furnished Promptly**

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KELLOGG SWITCHBOARD AND SUPPLY CO.

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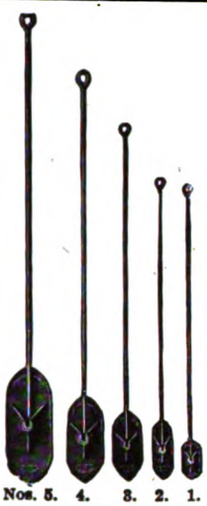

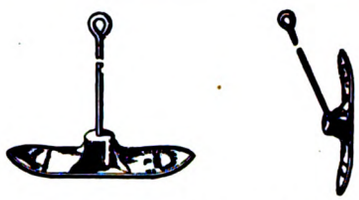

Hercules Anchor

(PATENTED)

The Iron Dead Man

Made in five sizes, from that for 20-foot pole to large one for extremely heavy strains, wrecking trains, etc.

They are the best anchor in every way for holding up heavy leads and round corners. Easy to set, pull against solid earth and will not creep.

As they are made of Malleable Iron, they are practically indestructible. All anchor plates guaranteed.

Send for descriptive circulars and prices.

Manufactured by

THE W. G. NAGEL ELECTRIC CO.

26-30 ST. CLAIR ST., TOLEDO, O.

Horizontal Telephone Cable Splices

HAVE MANY DISADVANTAGES.

First—You have two masses of solder on each end of the sleeve that have to be carefully wiped, which necessitate the employment of a high priced expert cable splicer. Second—Your horizontal wiped joint may not be absolutely moisture proof. Third—When it is necessary to open a joint the solder has to be blown off of both ends and the sleeve moved back or cut. Fourth—It is difficult to get at the inside pairs. Fifth—The sleeve must be moved over the spliced pairs and both ends carefully soldered and wiped when a test or repair is finished. Sixth—It does not admit of changing of multiples without removing the sleeve and solder. Seventh—It takes at least two feet more room in a manhole, in underground cable construction. Eighth—It costs more on first installation.

Compare the above with the ease and economy with which a joint can be made when you use

No. 1.

No. 2.

No. 3.

No. 4.

No. 5.

No. 6.

HARGIS CABLE SPLICING JOINTS

By referring to the six pictures and the following descriptive matter you will get a good idea of its advantages over the old style horizontal wiped joint. No. 1—Showing method of putting cable through lead gasket and brass collar before soldering. Note the cut thus formed. No. 2—The solder at a little above wiping heat is then poured into the cup and any roughness removed by a blow torch and wiping cloth. No. 3—The armor is then taken off the cable and the wires boiled out with paraffine. No. 4—The wires are then spliced as usual, only with greater ease. No. 5—Shows the appearance of the H. S. J. when the pairs are laced ready to be enclosed by the lead casing. No. 6—The joint is completed by screwing the sleeve tight with the spanner wrenches.

Made in three sizes. Costs less on first installation. Saves money while in use. Send in your order to-day.

W. N. MATTHEWS & BROTHER, Manufacturers of Patented Money-Saving Specialties

214 N. Second St., St. Louis Branches: New York, San Francisco.

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Cash Register and Pay Station

[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE

United States Coin Register Co.

TOLEDO, OHIO

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NO TROUBLE FOR ANYONE

The Livermore One Slot Pay Station

No trouble for the SUBSCRIBER, because there are no levers to pull and no possibility of placing the coin in the wrong slot. Any coin specified by the operator is dropped into the one-slot where it automatically selects the proper signal.

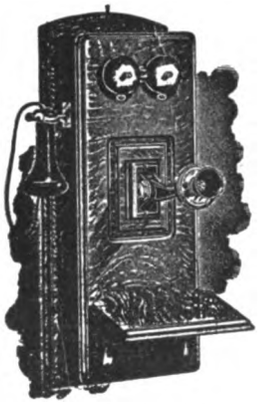
No trouble for the OPERATOR. The signals are mounted together with the transmitter on a bell metal resonator, which is insulated from the box and the coin chutes. This eliminates all rattling noises from the talking circuit, due to the traveling of the coin through the chute, and the operator receives only the clear, easily distinguishable signal.

No trouble for the INSPECTOR. There are no complex air pumps, springs, knives, clock works, or push buttons to get out of order.

No trouble for the MANAGER. There are no complicated parts to get out of repair. The coin always gives the correct signal, which the operator has no trouble in receiving. The public has "no kick coming," and the manager has no trouble in convincing his directors that the "Livermore" pays dividends.

Better Order Now

LIVERMORE PAY STATION CO., 4 Bowker St., Boston, Mass.



1st

TELEPHONE MADE

with all connecting wires, binding posts and terminal screws fully concealed

To Prevent Trouble

and with no exposed metal parts in the circuit to

Avoid Danger

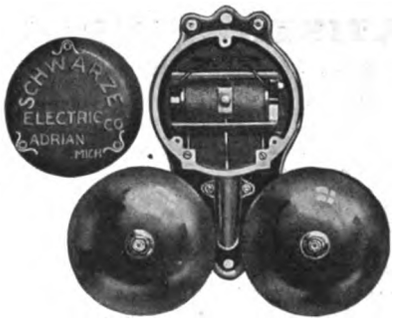
from lightning while using the instrument. Send us your inquiry and we will "SHOW-U" at our expense an interesting proposition.

INTERNATIONAL TEL. MFG. CO.

Our Price is Right — Harrison and Clinton Sts., Chicago

Magneto Loud Ringing Extension Telephone Bells

Gongs 6-inch to 10-inch



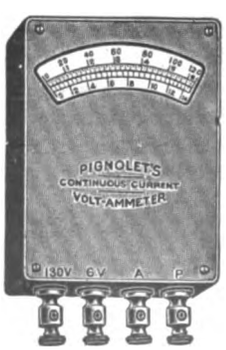
All Resistances — All Weatherproof

Efficiency, Durability and Price will interest you.

Schwarze Electric Co., Main Office & Factory, Adrian, Mich.

Branches { Chicago, 324 Dearborn St. St. Louis, Mo., 706 Victoria Bldg. / Pittsburg, Renshaw Bldg. San Francisco, 906 Atlas Bldg.

TO BE FOREWARNED IS TO BE FOREARMED



If you are not using a measuring instrument to test your lines, get one at once, as you will need it many times before the summer comes. It would be just as sensible for a grocer to try and sell sugar by guessing at its weight as it is for you to try to locate a fault in a line by the same method. PIGNOLET VOLT-AMMETERS are designed to give the best results required for testing purposes. They are not complicated nor do they require experts to operate them. Another point in their favor is their low cost. There is no instrument on the market which will give you as accurate results at anything near the price. Hadn't you better write for prices and further particulars By buying one now you will save its cost many times over before you have had it a year.

LOUIS M. PIGNOLET, Originator of the Voltmeter Habit

75 CORTLANDT ST., N. Y.

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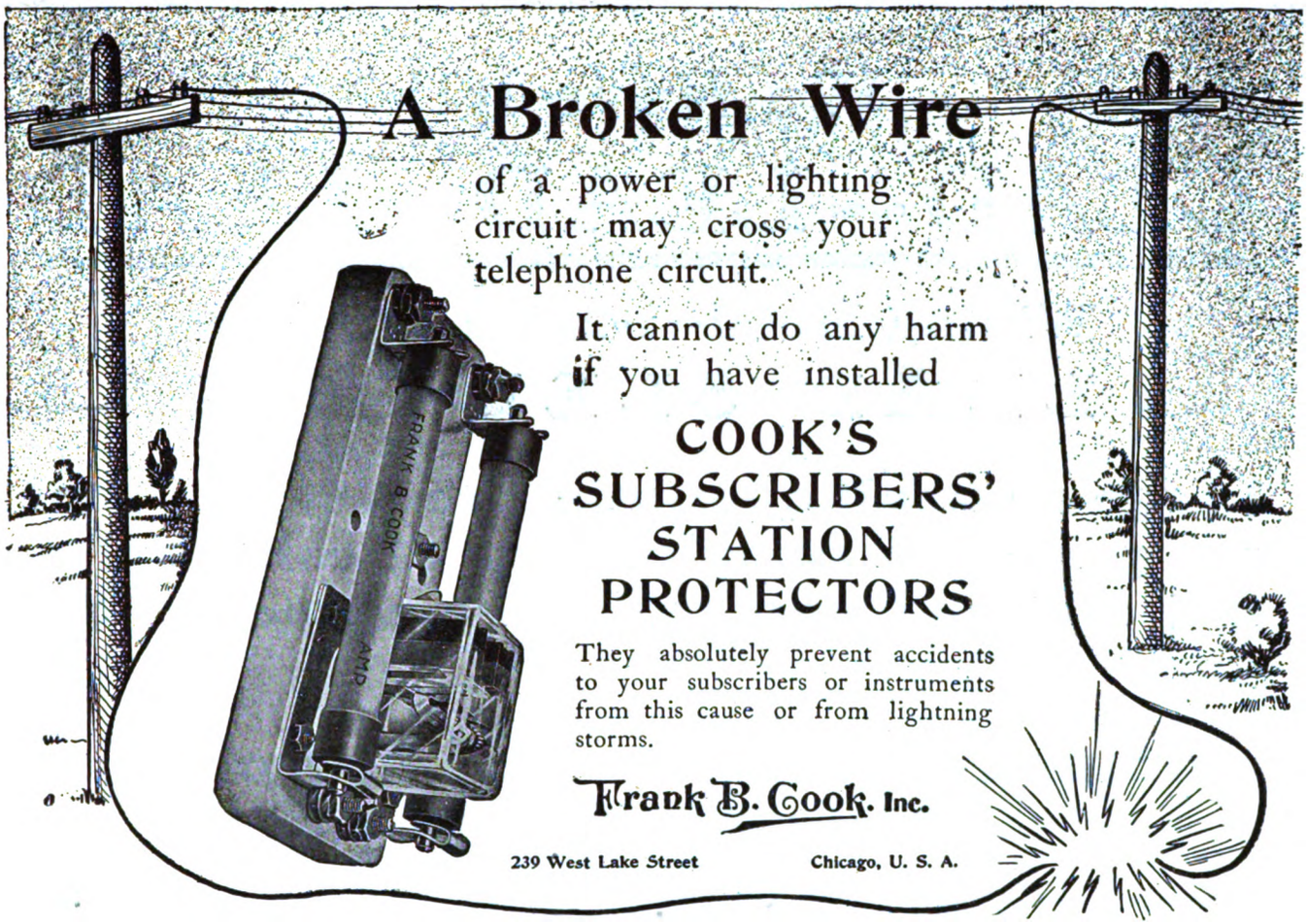

A Broken Wire

of a power or lighting circuit may cross your telephone circuit.

It cannot do any harm if you have installed

COOK'S SUBSCRIBERS' STATION PROTECTORS

They absolutely prevent accidents to your subscribers or instruments from this cause or from lightning storms.

Frank B. Cook. Inc.

239 West Lake Street Chicago, U. S. A.

"It might interest you

to know that the total maintenance expense of parts for our entire plant of 3,000 switches for the past eighteen months has been $10.24," writes Supt. J. A. Duncan, of the Sioux City Telephone Company, Sioux City, Iowa. (This company operates our AUTOMATIC TELEPHONE SYSTEM.)

"A like sum

would perhaps take care of the repair cost on operators' chairs in a manual exchange of the same size," adds Mr. Duncan. (We'll be glad to send you a copy of his letter if you'd like to see it.)

It occurs to us

that the one item of switchboard cords alone for a manual exchange of 3,000 lines would amount to at least $150 in eighteen months. That is fifteen times the cost of all repair parts on the Sioux City automatic exchange.

That is only one

of the many economies of the AUTOMATIC SYSTEM. These economies all help to swell the profits. And—the AUTOMATIC, being the best service, commands the highest rates. Low production cost plus high selling price equals big dividends. That is what led to the adoption of the AUTOMATIC TELEPHONE SYSTEM in the following cities:

Aberdeen, S. D.
Akron, Ohio.
Allentown, Pa.
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Auburn, N. Y.
Battle Creek, Mich.
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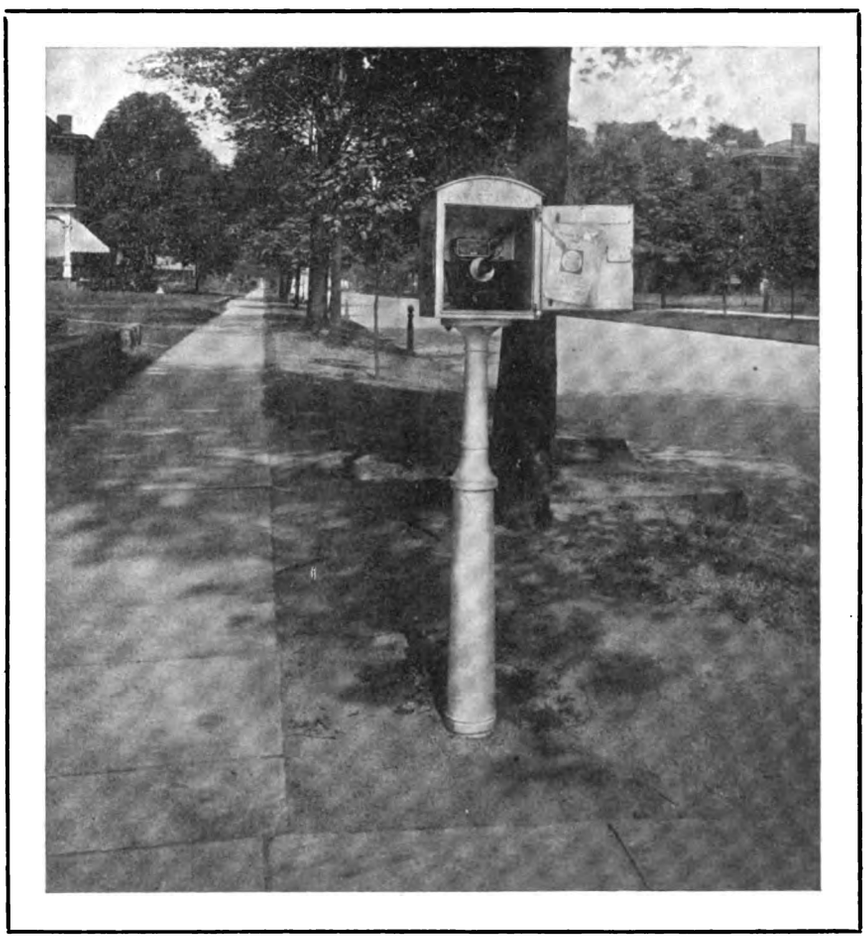
Earning for the Tenant and Paying the Landlord

Why the Coin Collector Pay Station Provides the Highest Revenue Per Station for the Telephone Company, and Helps the Business of the Person who Shelters It.

By O. F. French.

WHEN measured service devices are mentioned, comparatively few telephone men think of the ordinary pay station coin collector. Yet this is in fact at the same time the most common and the simplest apparatus for recording telephone calls, and the stations in which it is placed are in the truest sense of the phrase measured service stations. Business from these stations always partakes somewhat of a special nature. It requires some modification of ordinary methods for handling, and presents features which differentiate it from that done at a regular house or business station, when regarded from any one of several points of view.



Typical Location for an Open Air Coin Collector Pay Station.—This Shows one of the Instruments of the Cuyahoga Telephone Company on a Principal Residental Street in Cleveland.

The business man who installs a coin collector pay station is likely to find it before long assuming a place as one of the most important conveniences in his establishment. While taking up a trifling amount of space, and requiring practically no attention, it is almost sure to bring him a very fair revenue, and sometimes becomes a genuine money saver into the bargain. When a pay station is located in an establishment on a commission basis, the share of the proprietor is in most instances enough to pay for his own telephone service, and in adidtion bring him in a very considerable cash return—all this without his investing a single dollar. The writer recalls that during the year 1905, when he was in Cleveland, there was more than one corner drug store where the proprietor was entitled to between twenty-five and forty dollars a month as his share of receipts from a single station. In these drug stores the value of the telephone pay station as an indirect source of revenue is especially evident. It brings in customers. One of Cleveland's down-town business corners is occupied by a drug store where there is a pay station which in one year was used by more than 30,000 people.

As a money saver the pay station helps the business man in a large place by taking very many calls which, as deadheads over his regular lines, would congest the traffic on these wires, and probably shut off incoming calls, orders, etc., which it would be important for him to receive. It also cuts down considerably the number of unnecessary messages of employees, so that the telephone booth is not made a place for idling. To the small user of service the pay station is a genuine boon, for the receipts from outsiders pay a part, or all of what a private line would cost, and his incoming calls are of course received without charge.

That the pay station is appreciated by the public in general is evidenced by the frequency with which they make use of its facilities when they have an opportunity to do so. Those who want figures will be interested to learn that in nearly every one of a thousand pay stations of the Independent company of Cleveland the average revenue was observed to be greater than that of the individual

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business line. By this is meant the revenue derived from local calls only; long distance receipts being also a large item of income.

The public naturally turns to the pay station when occasion demands, as it affords ready access in cases of emergency to physicians, ambulance, fire and police departments. Especially is this so in the case of street corner pay stations, located as they are, or should be, in the residential districts where it is not possible on account of lack of business places to locate a pay station in a building where it will be accessible to everyone.

There are many points to be observed in connection with the operating features of the ordinary devices now being used for coin collectors. They may be divided into two general classes: those the operation of which is strictly mechanical, and those electrically operated.

The mechanically operated devices may be sub-divided into two kinds, the gravity type and the lever type; the electrical devices being also separated into two types, gravity and prepayment. The electrical gravity type need not be considered, as it is practically out of the market to-day.

As with any device there are advantages and disadvantages in the use of instruments in each of these classes. A few, as verified by the writer's experience, will be enumerated here and the reader can compare them with his own opinions. The only advantage claimed for the prepayment coin collector is that it reduces the drag on the operator, consequently insuring more rapid service and a lower cost per message for operating, the coin being deposited by the patron before he is able to get the operator's attention. The operator is therefore consuming no time in instructing the patron to drop the coin. Assuming that the prepayment device operator handles the same amount of traffic as the unlimited service operator, she will handle about one-third more calls than the pay station operator having any other type of equipment.

On the other hand this device requires a ground at the subscriber's station, which in the larger cities, on account of electrical disturbance and sneak currents, is objectionable.

In case of the prepayment line being out of order, the patron not knowing this to be so will deposit a coin which may not be returned to him, as the operator who controls the returning device has no knowledge of the event. The use of this device is also a source of annoyance in the case of an emergency when it is desired to get an ambulance, or get into communication with police or fire departments, and the user has no coin of the right denomination available. With any other type of coin collector the operator will put the call through immediately without question, for with most companies such emergency calls are handled free of charge, as they should be.

The remaining collectors are those under the mechanical classification, or in other words, the lever and gravity types.

In case of the coin collector having slides, levers, dash pots and springs, the possibility of fraudulent use of the machine is minimized as compared to the gravity types. On the other hand the employment of these extra parts brings complications with a consequent liability to higher maintenance charges, and what is more disadvantageous to the company a loss in revenue and confidence of the public because of the device being occasionally out of order unless the mechanical construction is up to the very highest attainable standard.

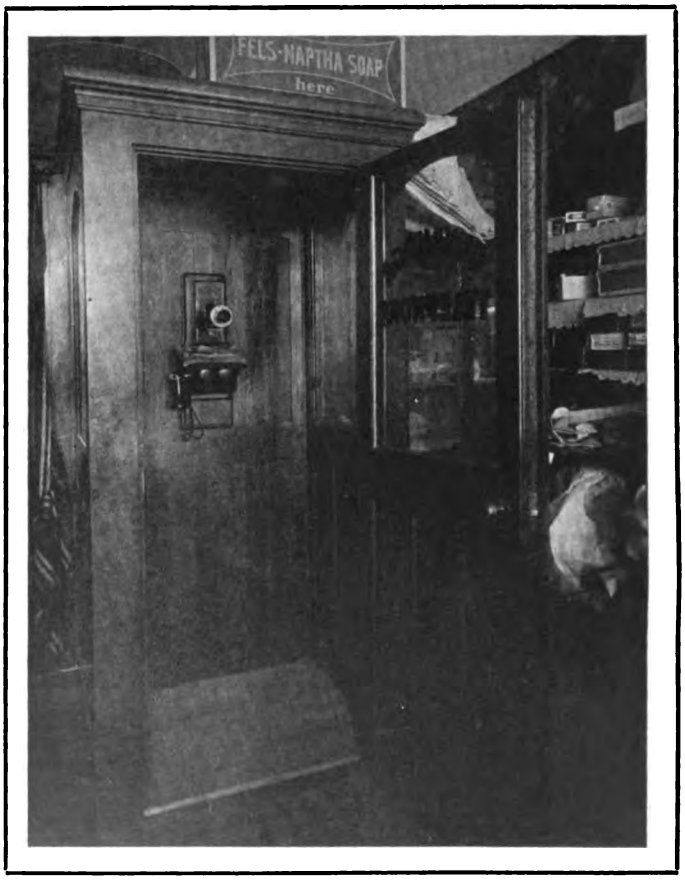
The advisability of the use of magnetic slug deflectors, coin rejector pockets, and flippers to insure against depositing more than one coin at a time, is a question which should be determined by the actual necessity for their use. Any of these parts are liable to get out of order and should not be used unless absolutely necessary. In the writer's experience this has been only so in cases where pay stations are located in out-of-the-way places, the cheaper class of saloons, etc. It is seldom that a patron will deposit a coin in the wrong slot. In fact this happened so infrequently in Cleveland (and then only in the case of poorly lighted booths) that the rejector pocket was not found to be a necessary adjunct to the coin collector. The solution of this would be to properly light the booth. Such should be the case in any event.

With the gravity coin collector the flipper is not necessary, for it is hardly possible that the patron would drop coins in two slots at the same time. The value of the gravity device lies in its simplicity. It has no moving parts and consequently a minimum of trouble. Its operation is easily learned by the patron, as it is similar to practically all other slot devices. Operators claim in case of the lever or push slide types of devices that too much of their time is taken up in instructing subscribers in the use of the machine.

Now as to the number of slots. Out of Cleveland, in 1905 with a population of nearly a half million, only eleven per cent of long distance calls were of fifty cents and above in amount, the dollar messages being but a fraction of one per cent. This would seem to indicate that the dollar slot is entirely unnecessary and it is a question as to the necessity of the half dollar slot. There is no doubt that for the eleven per cent of half dollar calls at least one half the tolls were deposited in coins of less than fifty cents in denomination, and it would be quite possible in the balance of messages to get coins of less than half dollar denominations.

The pay station operator's equipment should consist of a double key in each cord circuit, making it possible for her to talk with the subscriber at either end of the line without the knowledge of the other, and with both subscribers at once. It is annoying to the stalled subscriber to hear the operator notify the calling subscriber to drop the coin.

As a busy pay station operator will have on the average about ten cord circuits in use at one time, she should have means of ascertaining when the period of time for conversation allowed the subscriber for the price of one coin is ended. As it is physically impossible for an operator to keep track of each of ten connections, she will give the patron the benefit of the doubt, and as a consequence the calls instead of not running



Single Booth, with Coin Collector Pay Station, Located in a Corner of a Small Store.

over, say, five minute periods, will average more; for this surplus the company of course derives no revenue. It is probable

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that a satisfactory plan for doing away with this difficulty will eventually be worked out.

To the telephone company the pay station is especially advantageous, as compared with the private station, in a number of important ways. In the first place it is an excellent medium for advertising the service, as one or more standard toll signs may be installed in connection with each pay station. All pay stations should be equipped with one or more of these signs, placed on the front of the building or on a pole near the building, together with a framed transparent glass sign in the front window. In the more desirable locations properly lighted and ventilated booths should be installed.

In the matter of service it is important that the attention given by operators to public pay stations be of the very best. Such service is considered as the company's standard and will have good or poor effect as the case may be in the mind of the public. Public pay stations should be on individual lines, as it is found that party line service in this connection is unsatisfactory. With good service there can be no better advertisement than a pay station. Every time a non-subscriber uses the instrument he has an object lesson as to the advantages of telephone service which in time results in many applications for telephones.

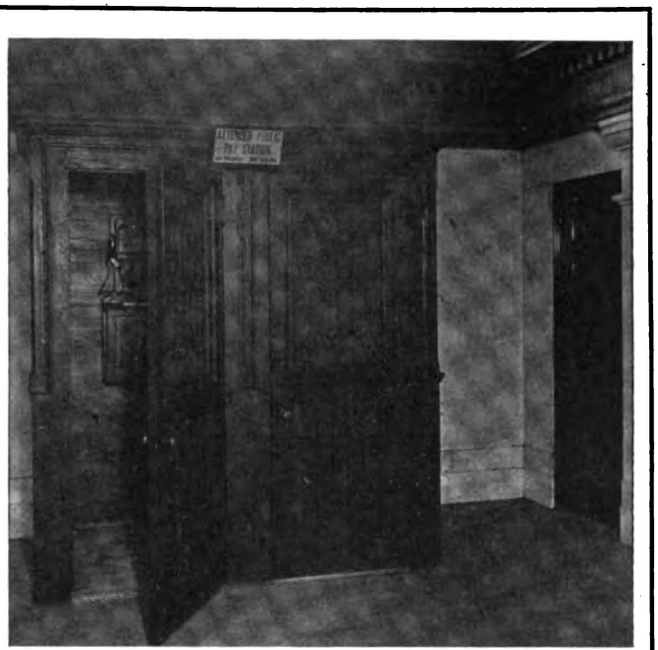
As stated above the pay station greatly aids in the giving of good service by taking care of the deadhead calls, a feature which is to the subscriber's advantage and also beneficial to the telephone company. If for no other reason the pay station is a great advantage to the company in that it gives nothing but measured service. There is no doubt but that at some future, and it is hoped early date, this class of service in business houses especially will be the only kind furnished by any telephone company. Telephone managements are awakening to the fact that to handle a telephone call and connection costs money, and that the cost increases with the traffic. The only recourse now in case of unlimited service is to raise the rates, which is a most unsatisfactory procedure from both the subscriber's and the company's standpoints; but that is another story, as Kipling would say. The fact remains that the pay station coin collector is one of two well known types of instruments for measuring telephone service, and in the writer's opinion is the more practical one. With the coin collector, as in the case of street railway traffic, the revenue is secured in advance, thus insuring against bad debts and disputes as to correctness of the bill, which would necessarily have to be presented in case the coin collector was not used, but in its stead a meter.

In order to establish pay station service, telephone companies usually enter into contract agreements with subscribers, of which agreements at least two distinct forms are good. In one the company allows the subscriber as his commission a certain percentage of the local and long distance receipts over and above a stipulated amount per month; say $6.00. In case the deposits for the month do not amount to $6.00 the subscriber is to make up the deficit upon demand.

The other arrangement, which with the better class of pay station subscribers the writer has found advantageous, is the so called "code word" agreement. The subscriber is rendered a bill quarterly in advance at the rate of, say, $6.00 a month for the incoming and outgoing calls to himself and clerks, who are not required to deposit a coin if the individual code word is repeated to the operator. Outsiders are required to deposit tolls, and the subscriber is allowed a certain percentage of all coin collections as his commission. The latter arrangement has been a better earner for the telephone company but has the disadvantage that the code word may be divulged to outsiders. The writer does not recall any instance where this form of deception has been practiced to any extent.

In some instances where a contract could not be entered into with the proprietor and where the pay station soliciting agent was practically certain that the location was a good one, pay stations have been installed without any guarantee on the part of the proprietor, the company taking the entire receipts of the coin collector, only giving the proprietor the benefit of incoming calls.

All these separate considerations, bringing out advantages to



Attractively Designed and Arranged Booths in Lobby of a Large Office Building.

everyone concerned, show that to-day no public place is completely equipped for the convenience of people who visit it without the telephone pay station. For instance, at such points as the following: hotels, lobbies of large public buildings, large retail stores, drug stores, summer amusement resorts, the higher class of cafes and restaurants, railroad stations, prominent residence street corners, etc., should always be equipped with such instruments. In the business district the shopping public finds it a great convenience in calling the home and other stores.

In four large department stores in Cleveland the writer's notes show that each coin collector averaged about $25.00 a month; six down town hotels, $55.00 a month; five office building lobbies, $15.00 a month; eight down town drug stores, $36.00 a month; six prominent cafes, $24.75 a month; ten railroad stations, $25.50 a month; and the receipts of the opposition company probably run about as much. These figures bring out clearly the strongest point—namely, that from the viewpoint of the telephone company the best argument in favor of the pay station is that the net revenue it brings in is greater than that derived from any other class of service.

ATTEMPT TO PREVENT INDEPENDENT COMPANY FROM BUILDING IN TENNESSEE HIGHWAYS.

SUIT was brought in Nashville, Tenn., recently to test the new law passed by the state legislature last winter relative to rights-of-way for telephone and telegraph companies. The Independent company, which is constructing a line from Louisville to New Orleans, is the object of the attack. W. B. Marr, a member of the House of Representatives of Tennessee, who was bitterly opposed to the law declaring telephone companies public service corporations and granting them rights-of-way over roads and streets without the consent of the authorities, is the complainant.

Mr. Marr in the first place filed one suit to enjoin the secretary of state from issuing a charter to the Home company, but this failed. He now sues as a citizen of Davidson county, charging that the company has no right on the public highways until granted specific authority by the county court. The Cumberland Telephone & Telegraph Company is said, on reliable authority, to be back of the fight, which is simply another malicious obstacle intended to hamper the Independents.

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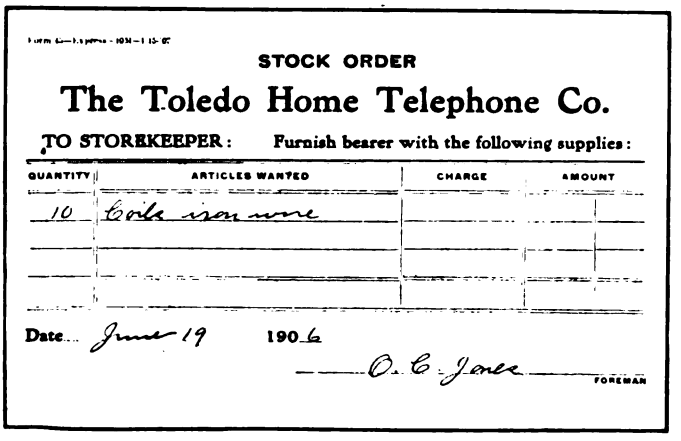
Managing a Telephone Company's Supply Department*

By M. R. Tracy, Storekeeper for the Toledo Home Telephone Company, Toledo, O.

NOW, as to *outgoing* material. The foreman gives a stock order for what he wants. It should be specific and state just what and how much is wanted. The storekeeper must make it a rule never to accept an order that needs oral "explaining." The writer tells the men that he cannot record wind. The weather bureau does that.

This stock order (Fig. 16) is *dated* and posted to the card for that material and the date on the card coincides with the order date. At the end of the month all the material on this card is totaled and appears in the typewritten monthly report.


STOCK ORDER

The Toledo Home Telephone Co.

TO STOREKEEPER: Furnish bearer with the following supplies:

QUANTITY	ARTICLES WANTED	CHARGE	AMOUNT
10	Coils iron wire		

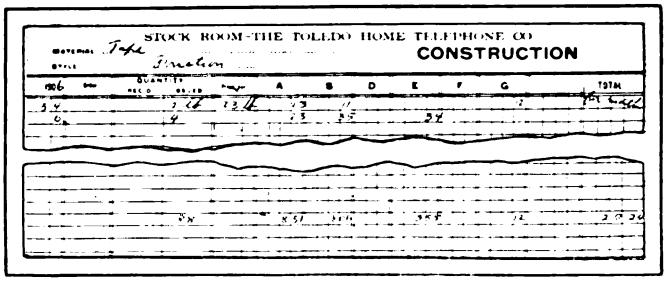
Date June 19 1906

O. C. Jones FOREMAN

Fig. 16. Sample stock order—not accepted because it does not state what kind of wire (whether No. 10, No. 12, etc.) is wanted.

By having the cards ruled in columns and the columns headed A, B, C, D, E, F, etc., it is made possible enter the quantity in the "quantity" column, the price in "price" column, and the amount under the letter designating the distribution. Each day items are posted from stock orders, of whatever kind or form used, the quantity of each kind of material issued during the day to the card for that kind of goods; crossarms to "crossarm" card, insulators to "insulator" card, etc. In a large plant this may require a thousand cards. At the end of the month the several distributions are footed and the total carried to the total column. The cards often show material issued to several distributions; something like the sample card shown in Fig. 17.

This shows that in May the department issued 88 pounds of friction tape at 23 cents per pound. Of this $8.51 was for pole line construction, $8.06 for cable construction, $3.55 for installing telephones, and 12 cents for installing private branch exchanges. Total, $20.24. Now, having every item posted from the stock orders to the daily cards, and these cards all footed and totals carried out, the next step is the monthly report to the auditor. The manager also receives a copy and the storekeeper keeps one.


STOCK ROOM-THE TOLEDO HOME TELEPHONE CO

CONSTRUCTION

Fig. 17. Sample material card, showing quantity of friction tape issued on each date and amount chargeable to each department which drew it (indicated by letters.)

These often cover several type-written pages; each line is a copy of the footings of one of the daily cards.

The following shows the business done in friction tape for the month:

Description.	Quantity.	Price.	Distr.	Distr.	Total.
Tape, Friction....	88 lbs.	.23	$8.51 A	$8.06 B	
			3.55 E	.12 G	$20.24

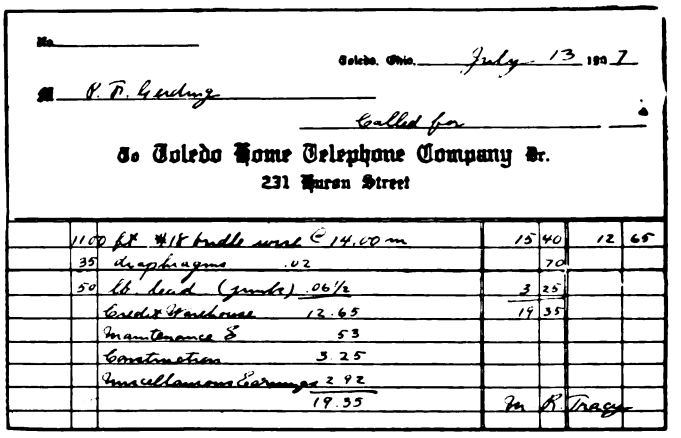
It will, of course, be alphabetical. Maintenance is treated in the same manner.

The next step is to get the totals of items charged to each distribution and the total of these totals will of course equal the grand total of construction and maintenance, respectively.

This report also shows the material returned to the warehouse, such as telephones discontinued, transmitters repaired, etc.

Now, if the manager thinks too much copper wire has been used during the month and wants to know about it, the Supply Department proceeds about as follows: The daily card shows that on the 10th the department issued one thousand pounds. The stock orders are filed as to the date and on looking up those for the tenth it is found that Mr. Jones ordered seven hundred and fifty pounds; Mr. Smith, seventy-five pounds, and so on through the day. The "work orders" on file in the Record Department show that Mr. Jones was ordered to "string copper wire in Locust street," his "work report" shows that he "strung one hundred and twelve spans of copper in Locust street." This may cover several days' work, but it gives the desired information, and the information can be verified, for the wire is there to show for it.

The first link in the chain is the *Requisition;* the second is the


No.

Toledo, Ohio, July 13 1907

M. P. T. Gerding

Called for

To Toledo Home Telephone Company Dr.

231 Huron Street

1100	ft #18 bridle wire @ 14.00 m	15	40	12	65
35	diaphragms .02		70		
50	lb. lead (junk) .06½	3	25		
	Credit Warehouse 12.65	19	35		
	Maintenance E 53				
	Construction 3.25				
	Miscellaneous Earnings 2.92				
	19.35	M. R. Tracy			

Fig. 18. Copy of invoice to auditor covering material issued to outside parties for which the warehouse should receive credit.

carbon copy of the *Purchasing order,* both having the same serial number; the third link is quantity received as shown on *daily record cards,* also showing serial number of purchasing order; then follows the *Stock order,* showing date and quantity issued; and finally the *Work order* and *Work report.*

There is another class of outgoing material to be accounted for, viz., "Sold to Outside Parties."

The manager may decide to sell some material to an individual or a friendly company and give a stock order for that amount of goods. Now, how is the storekeeper to charge this out?

It is not a construction account, for it does not go into the plant as an integral factor. The other side of the card is Maintenance, but that affords no relief, for the material is not used to repair waste places. There is no place on the cards for this entry and yet the material is gone and the warehouse must have credit. The manager could report the sale to the auditor and the auditor then give the warehouse credit through the invoice journal. Here, however, one encounters another difficulty. These goods are sold at a profit and the auditor does not know how much credit to give the warehouse.

*Continued from issues of June 1 and June 15.

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If he credits it the full amount, the card for that material will not balance; it will show more value given out than was received; or the manager may have sold some material that is already charged out as Special Equipment or Incidentals. These difficulties disappear if the storekeeper certifies it to the auditor and he in turn bills it through the invoice journal.

When the storekeeper certifies it to the auditor he shows the amount of credit due the warehouse and also the amount of miscellaneous earnings (profit) and any other distribution.

In Fig. 18 is reproduced a carbon copy of the invoice to the auditor, which the storekeeper retains. On this he notes (at the right) the amount of credit he wants the warehouse to receive. The bridle wire costs $11.50 per thousand and therefore the warehouse gets credit for only $12.65. The diaphragms have already been charged out as "Incidentals," but as they cost only 1½ cents each there is a profit (Miscellaneous Earnings) on these two items of $2.92. The lead is junk and does not enter into warehouse accounts at all. These items appear in the storekeeper's report as "Issued to Outside Parties," but are not yet a warehouse credit; not until the credit comes back to him through the invoice journal.

There is a large amount of material received into the warehouse that is not and should not be charged to the warehouse account. The first thing in this class which the writer would mention is junk, such as pieces of cable, scrap copper wire, etc. This is stored as it accumulates and when sold is credited to construction. There is no warehouse account at all. It is a part of the warehouse, of course, but not a part of the warehouse accounts. The storekeeper has to distinguish constantly between himself as a warehouse foreman and as a bookkeeper. Another class of material that is carried as material but not accounted for is defective maintenance material, such as defective transmitters, defective receivers, etc.

When a transmitter becomes defective it is replaced with a new one, and the new one charged to maintenance account. Now, if one knew how much it would cost to repair that transmitter he might credit it in at the net value, but the next one might

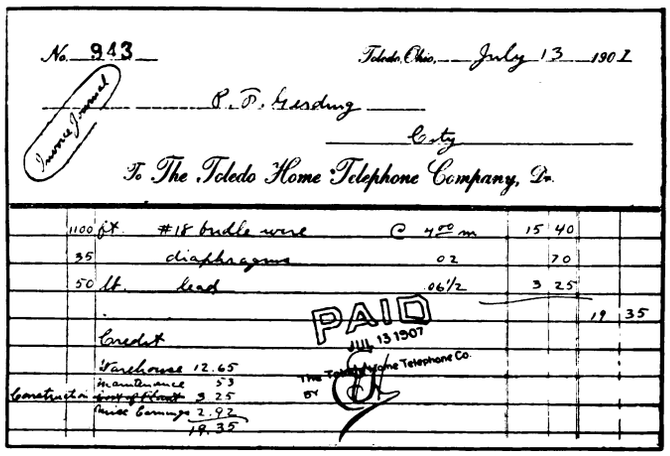

Fig. 19. Invoice journal entries covering same material recorded in form reproduced in Fig. 18, showing distribution of receipts amongst four accounts.

be of a different value and some estimated at a certain value might be absolutely worthless when they reach the factory. The better way is to store them until a supply accumulates and then send them to the factory.

The transportation and repairs are charged to maintenance account, and then the repaired material is charged to the warehouse as "Received from Maintenance" in the monthly report. It is now an asset of the company.

(To be continued.)

Experiments With Concrete Poles*

By G. A. Cellar.

A POLE for the support of wires may be defined as a column, fulfilling in this purpose support against downward pressure; also a beam, fixed at one end and loaded at the other. In its capacity as a support for wires it is subjected to pressures downward and laterally and to more or less of torsion. But to fulfill the requirements for such a support as this necessitates a medium having, first, a moderate strength against compression; second, a superior resiliency, and, third, long life in contact with the soil.

In the first days of the telegraph the pole of wood was found to be far the cheapest medium for use in the support of wires, and in the earlier days of the telegraph and later of the telephone and electric light and power many different varieties of wood were used, varying with the native product of the different sections of the country as that product met requirements for resistance to destructive agencies encountered in the different localities. These requirements were found in greater or less perfection in the native timbers in many parts of the country or in timbers that required transportation for only a short distance.

The action of the ingredients of the various soils is largely responsible for the shortening of life of the timbers in contact therewith. Consequently in some soils timbers will deteriorate very much more rapidly than in others and vice versa. Therefore the use of timbers, especially those that are native or whose habitat is reasonably near to the place where they are to be used, is consistent with the greatest economy.

The arbor-vitae, or northern cedar (Thuja Occidentalis) combines reasonable strength with resiliency and with the almost ideal tapering form necessary to afford the maximum strength at the point of greatest pressure under varied stresses, viz.: the ground and water line. This has accordingly been for many years the generally accepted and generally used timber for telegraph, telephone, light and power lines throughout the country where the transportation charges would not so add to the initial cost as to make the total prohibitive or exceed the cost of some only slightly inferior native timber.

Throughout the Middle East, parts of the Ohio Valley and in other localities the chestnut is plentiful and has quite a long life in contact with the soil. Its form is not nearly so perfect as the white cedar, but it far exceeds the latter in strength to withstand lateral stresses, although its length of life is inferior to that of the cedar except perhaps in the regions where native.

On the Pacific coast sawed red wood poles have been and are still in use and in Mexico various timbers are utilized, the process being to cut a piece of timber with rectangular section diagonally along its broader side from near one side at the one end to near the other side at the other end, making of such section two poles, each of large base and small top. This form of support has also been used in the construction of steel supports by halving I beams in the same manner.

The northern cedar as a proposition for the supply of the immensely extended telegraph, telephone, light and power lines has passed the safety line as a resource. The western cedar, of which there are immense quantities, is so far away from us that the transportation charges make the price per pole almost prohibitive for ordinary purposes. The chestnut, considered as a supply for its native region, is to be depended upon for the immediate future, but is sadly inadequate as a supply for the whole country. Therefore the mind instinctively turns to a manufactured article which shall take the place of the natural, and the logical time when the manufactured product shall so take the place of the natural is when the former can be produced as cheaply as the latter.

(Continued on page 417.)

*Abstract from a paper presented at the Association of Railway Telegraph Superintendents, Atlantic City, N. J., June 19. Mr. Cellar is Superintendent of Telegraph, Pennsylvania lines west of Pittsburg.

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From the Editor's Viewpoint

A TOPIC FOR DISCUSSION.

BEFORE they undertake any extensive amount of construction, telephone companies everywhere are at the present time figuring the cost, and also the possible returns, very carefully. Probably more attention is being given to these matters by many companies during the present year than at any previous time in their experience. Whatever may be the assigned reason for the necessity for watching new work with exceptional care, be it the high cost of copper, or the natural increase in cost per line with the extension of the system, there does not seem to be any such occasion for distress at the existing situation as is observed in some quarters. In fact, it is probable that many companies will practically be forced into giving more careful attention than they have done to a line of investigation which will bring them distinct benefits.

There is probably not an exchange in the country where the manager himself, or any competent construction engineer, could not go about and point out many inconsistencies which increase the fixed charges on each subscriber's line, or which, if recognized, would compel special financial arrangements in order to make up for past deficiencies by providing an increased surplus for future reconstruction. Among those which might be noted particularly in the distribution system, for example, are improper adjustment of the ratio of conduits, number and size of cables, total number of cable conductors, etc., to present requirements of development, and those estimated for the future; lack of consideration of the life of material in relation to present installations and future development, and various other details which in the aggregate stand for a considerable useless expenditure of money, which is a constant drain on the resources of the company. In a business where methods of manufacture, engineering and construction are being improved upon as rapidly as they are in the telephone field, and where, moreover, the adjustment of construction to development is dependent upon two variables so difficult to estimate as the increase in population and the proportion of telephone users to persons in a given district at a given time, it is inevitable that these inconsistencies should have occurred, and extremely probable that they will continue to do so as long as a wire plant is used for the transmission of speech. The thing to be done in order to reduce to the lowest terms the drag which they exert upon the company's profits is: First, to reduce the number of such inconsistencies; and, in the second place, to endeavor to fix upon at least certain standard methods of procedure in making studies for future development, and to adhere to them so closely, as long as they appear to be reasonably true to real conditions, that whatever variations occur may be not only few in number, but involve a minimum departure from ideal conditions.

In conventions, and other gatherings of telephone men, a great deal of attention is given to the matters most obviously relating to the financial requirements of the business, such as the basis for division of receipts on interchanged business, collections, getting new business, etc. In few of these meetings does anyone show by bringing forward a carefully studied paper, or even by an informal talk, that he realized that methods of arranging the development and distribution of the plant, in relation to the future growth, exert so great an influence upon future profits as is in fact the case. Managers must learn to figure in dollars and cents just what the results of adopting a certain type of construction will be five, ten or twenty years from now, and in making up these cost estimates get results on which they will be willing to stake their reputations.

The transmission of speech is a permanent public necessity and to carry on the business arrangements of a telephone company on a basis which will be permanently economical is also a necessity which will in the future be felt with ever increasing force by those to whom this duty is entrusted. It is safe to predict that some years hence those sections of the country where the most consideration has been given by individuals and groups of telephone men when they have met for practical conferences, to this question of economical distribution will have the plants paying the best dividends.

CONCRETE POLES.

TELEPHONE men are undoubtedly much interested in such progress as has been made in the development of concrete poles which will have, to paraphrase Mr. Cellar's optimistic words which appeared in his admirable paper presented at the Convention of Railway Telegraph Superintendents, a life of infinite duration. Up to the present time such interest as has been felt seems to have led to no very practical results, those who have made experiments apparently being rather diffident about expressing an opinion in favor of the concrete pole for telephone use, and equally reluctant to condemn it.

Probably one reason for the lack of enthusiasm for this particular line of research has been due to the fact that those who have considered the subject have foreseen certain inconvenient features conected with the practical handling of concrete poles after they have been built. These have seemed to take the position of prime importance, and any consideration as to the relation between their first cost and that of wooden poles, installed on a typical telephone line, and the relative life of the two types, has been put aside, no one having taken pains to acquire definite and reliable data. The difficulties referred to as applicable to railway telegraph lines are mentioned by Mr. Cellar, but the conditions prevailing in railway practice make his conclusions of doubtful application to telephone systems. For example, there can be no comparison between the method of distributing poles over a railway line, using a locomotive and cars, and their distribution over a country highway, having the usual variation of grades and surfaces, so as to make any general conclusions as to cost utterly impossible of attainment. On account of this fundamental difference in transportation conditions, telephone men will have to investigate for themselves, and discover, if possible, some method of economically manufacturing concrete poles near the place where they are to be used, or a method of transporting and handling finished poles, made in quantities at a convenient point, which will not be too costly to offset the advantages gained by their increased life. In cases where studies prove neither of these methods to be economical for country lines, the use of concrete poles would seem to be restricted to cities and towns. Here, again, comes the question as to the real advantage to be gained by their use. In well constructed telephone systems no open wire is used in business and thickly settled residential districts, so that poles are only used for supporting leads of aerial cable. This type of construction is being gradually supplanted by cable run in underground conduits. Even if it could be assumed that poles erected to-day for carrying aerial cable would be sufficiently valuable to pay for their removal and relocation in places as yet unknown, at a time when the aerial cable is to be replaced by underground cable, it would be advisable to make a very careful study of the probable comparative costs, including fixed charges for an extended period, before actually locating the poles.

These points are brought up by the features of Mr. Cellar's paper which do not strictly relate to telephone practice. On the other hand, the carefully arranged general discussion of the subject, and more particularly the part of his paper which will be published in our next issue, showing the results of tests which he has made to determine the comparative resistance of concrete and wooden poles to a horizontal stress, will have a decidedly positive value to all of those interested in the use of poles as supports for wires. From whatever point of view one is disposed to consider it, the present paper is a very valuable contribution to existing literature on wire supporting devices, and should exert a decidedly stimulating influence upon those who have had it in mind to take up other investigations along this line.

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Legal Snares Untangled

CONDUCTED BY A. H. McMILLAN.

RELATIVE RIGHT OF TELEPHONE AND TROLLEY COMPANIES.

A trolley company now stringing its high tension wires parallels a grounded telephone lead of seventy wires for a distance of five blocks on the opposite side of a sixty-foot street. When the city granted a franchise to the trolley company it provided that if the construction or operation of the road required the alteration or rebuilding of any telephone line, the expense must be borne by the trolley company.

If the trolley company refuses to comply on the ground that the city, not being financially interested in either trolley or telephone company, cannot interfere to protect the rights of one as against the other, can the telephone company enforce collection of said expense by suit? If not, can the telephone company require the railway company to make its line metallic so as to avert the induction which is sure to follow, and interfere with the proper and satisfactory service over the telephone lines? Will an injunction lie to prevent the trolley company from applying current or operating cars until circuits are made metallic? J. W. W.

IF, under the circumstances you state, the city cannot or does not interfere to protect the rights of the telephone company, the telephone company can, itself, by force, enforce collection of the expenses it has been put to by the alteration or rebuilding of its lines. It might also require the railway company to make the telephone lines metallic, so as to avert interference by induction, and injunction will lie to prevent the trolley company from turning on its current, or operating its cars until the required action has been taken.

FRANCHISE IN KANSAS.

(1) When a telephone company gets a franchise to build and operate a certain type of telephone exchange in a city, and after built is not a success and is torn out, and a different system built instead, is the franchise good, when it first tells the kind of system, as stated above, and never has been changed; it commenced to put in the exchange some ten years ago and was chartered since the franchise was granted.

(2) This same company was granted the privilege of building on any and all the streets, including main; was also granted an exclusive franchise in the city for telephone purposes. Can the City Council keep other telephone companies (incorporated) off of the streets, except just to cross them, and still let the first company maintain its poles and wires, and keep on building on the streets?

(3) Can a City Council grant privileges to one telephone company and debar any other company from the same privileges?

(4) In a city of the third class, under the laws of Kansas, can a telephone company build and maintain lines on any street except the main street? S. S. McE.

THE above questions will be answered in the order in which they are asked, the numbers of the answers corresponding to the numbers of the queries.

(1) The laws of Kansas provide that telephone companies have the same powers and are subject to the liabilities and duties of telegraph companies (General Statutes, 1901, Sec. 1252). It is provided that telegraph companies (and consequently telephone companies) may set their poles, etc., along, upon and across any of the public roads, streets and waters of the State, so as not to incommode the public in the use of them. (Section 1342.) The power is given to the council of any city or the trustees of any incorporated town or village to specify by ordinance or otherwise where poles, etc., shall be located, the kind to be used, the height at which wires may be run; and the council may direct any alteration in the line or the height of wires, first giving the company the right to be heard. (Section 1346.)

It will be seen from the above provisions of the Kansas laws that a telephone company has the right to build its line in the public streets, irrespective of the permission of the local authorities, the power of the latter being limited to specifying where the posts shall be set, the kind of post to be used, and the height at which wires are to be run. The city council, therefore, had no power to prescribe what sort of exchange should be installed and its requirement in this respect is without effect. The failure of the company to comply with the requirement as to the kind of exchange would not invalidate the rest of the franchise, and the ordinance granting a franchise would be valid permission to the company to occupy the streets designated.

(2) The city council, under the above quoted provisions of the State law, has no authority to keep other companies, whether incorporated or not, off the streets. Other companies could compel the council by mandamus to designate the streets to be used, the kind of poles to be set, and the height at which wires are to be run. The exclusive feature of the company's franchise is of no avail as exclusive franchises are not favored by the law, and are invalid unless the city council has express authority granted it from the legislature to make franchises exclusive.

(3) A city council may grant to one telephone company privileges which it denies to another.

(4) In a city of the third class, under the laws of Kansas, a telephone company may build and maintain its lines in any street specified by the city council.

STRINGENT MEASURES TO PREVENT USE OF LINE BY NON-SUBSCRIBER.

AT Macon, Ga., a suit for an injunction to restrain Ernest Thorpe and several others from molesting a telephone line, of which the plaintiff was a joint owner, disclosed a remarkable system of dealing with a non-subscriber who insisted on using the line. C. R. Hancock, the plaintiff, alleges that the defendants became involved in a controversy with one C. L. Bateman, who was not a party to either of the agreements, and was wholly a stranger so far as having any interest in or rights with reference to the telephone line was concerned; that defendants claimed that Bateman, while not contributing to the construction of the line, had used it by going to petitioner's store for that purpose at times and by going to Byron and other points; that defendants presented Bateman with a bill for one-half the cost of construction of line, which Bateman refused to pay, and upon his refusal, in order to prevent Bateman from using the line, cut the line about a half mile from petitioner's house, using a file or some other sharp instrument to accomplish the act.

Hancock is of the opinion that if he should mend the wire the defendants would again cut it, it being averred that they have so declared their intention and wishes to have such action forestalled by order of the court.

RIGHT TO USE STREETS OF CITY INCLUDES RIGHT TO LAY CONDUITS.

A RECENT case has decided that an electric company having a right to use the streets of a city can lay its conduits under the sidewalks, they being parts of the streets. The case arose upon a suit for an injunction to restrain the property owner and his contractors, who were making an excavation under a sidewalk in the city of Pittsburg, from interfering with the conduit property of the complainant. The company claimed a vested right to maintain the conduit under the sidewalk, and this right was denied by the defendants. The company had municipal consent "to enter upon any public street, lane, alley or highway" within the city of Pittsburg for the purpose of carrying on its business.

The court held the permission from the city to include sidewalks, which are parts of the streets. There was also included in the grant of authority the right "to alter, inspect and repair its system of distribution." The court held that the company in placing its conduits under the sidewalk was simply altering its system of distribution, and in doing so exercised a right with which a city could not interfere unless, in the exercise of it, there was a violation of reasonable police regulations adopted by the city for the protection of persons and property from danger. The court reversed the decree dismissing the bill of complaint and granted an injunction. Alleghany County Light Co. vs. Booth (Pa.), 66 A., 72.

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EXPERIMENTS WITH CONCRETE POLES.

(*Continued from page 414.*)

Into the question of cost enters that of length of pole life. Heretofore the advisability of using wood preservative to reduce or prevent the decay of the wooden poles has been considered from time to time, but the practice has not been universally established because

(1) The pole prices have been very low.

(2) The increased life has not been found to be commensurate with the additional expense of treating the pole in its entirety.

(3) In the building of many lines the outlook has contemplated only moderate increases in facilities, whereas in many instances time has demonstrated that very much larger poles sooner or later become necessary, and therefore the process of deterioration only serves to take down many small lines that would have to be taken down anyhow, in order to make room for larger capacity poles.

The principal point of decay in wooden poles is at the ground and air line, where the alternate drying and dampening induces a condition of decay which grows and grows and frays away the body of the pole until it is so weakened that it has to be reset or replaced. On the lines of railroad along which a great proportion of the telegraph lines of the country are located the unoccupied portions of the rights of way are kept in turf, with a view to presenting the best possible appearance, and, consequently are subject to grass fires, especially in dry seasons, which are dangerous to standing dead timber, particularly to telegraph poles where the decayed portion at the ground line has become like tinder. Were it not for the increased liability to ignition the application of coal tar to the poles for a sufficient distance above and below the ground and air line to resist the inroads of decay would materially lengthen the life of the pole. While this process is all right in sandy, desert countries the grass fires in other territory preclude its general use.

Having the solution of the question of pole preservation much at heart, the writer, through the courtesy of the gentlemen of the engineering department of the Pennsylvania lines west of Pittsburg, some years ago made some rather comprehensive investigations into the matter of a preservative best suited for telegraph pole uses, and, casting aside the proposition to treat the whole pole as too expensive in proportion to the benefit thus derived, we decided (on account of the short time until certain construction work had to be started) to undertake a compromise by applying the preservative only to that portion of the pole extending one and a half to two feet on either side of the ground and air line. That the result justified the expense is borne out by the present condition of the poles so treated as well as by the result of the experiments by the Forest Service, Department of Agriculture, shown in the report by Mr. Henry Grinnell, assistant forest inspector (reprinted from the Year Book of the Department of Agriculture for 1905), on prolonging the life of telephone poles and describing the experiments in several methods of treatment from which he adduced the conclusion that, while the lapse of time since the applications were made had not been sufficient for a full report, the method of treatment, consisting of applying the preservative to the pole by brushes, was so cheap that it would certainly repay its cost by an increase of only eight months in the life of the pole. I had not until recently seen this report and did not know of the experiments, but, confirming as it did the results of my own trials, I feel encouraged to think that under present price conditions so long as we continue to use poles of wood we shall certainly find in the increased life of the pole ample remuneration for similar treatment with any good preservative preparation and especially one having decided antiseptic qualities.

The foregoing tends to show that the comparative price of the native woods with that of the manufactured pole is subject to considerable of a sliding scale as the life of the wooden pole is of short duration as compared with the estimated life which a manufactured article of perfect proportions should have.

In looking to a product which shall be the acme of structural possibility the object will be to secure an architectural fabric that will last forever and a Pittsburger instinctively feels that the first and best medium for the manufactured article will be steel. But consideration develops that the length of life of steel, without adequate preservative agencies, is not much greater than the long-lived woods. A great many patterns of steel poles have been made, but probably very few of them represent our practical desideratum. A careful and thorough study of the matter brings the conclusion that, to have sufficient long life for consideration, the inside as well as the outside of any steel pole open to the air must be accessible for the purpose of inspection and reapplication of preservatives.

So far as the writer has ascertained the preservation of steel imbedded in properly constructed concrete is perfect. Concrete not only does not disintegrate, but hardens and improves with age. Therefore a structure of reinforced concrete has a life that is practically unlimited and a telegraph pole made of reinforced concrete ought for many generations to endure and answer the purpose for which it is erected. The location of pole lines along railroad rights of way will in the future permit the use of shorter poles for supporting the wires nearer the ground than has been practicable heretofore because the rights of way of the railroads are better policed now than in the past and in the future will be much more safely guarded. The time will soon come when persons not employed on the railroads or whose duties do not require them to be on railroad property will not be allowed on the rights of way of any railroad company. In England and on the Continent, where trespassing is not permitted, it is the practice to use very much shorter poles.

The use of concrete for the manufacture of telegraph poles is not new. As nearly as I have been able to ascertain, the first concrete poles were designed by Col. G. M. Totten, chief engineer of the Panama Railroad Company, at a date uncertain but probably about 1856, the road having been put into operation in that year. These poles were cone-shaped, twelve feet long, with a diameter of from twelve to fifteen inches at the base and from six to eight inches at the top. The wires were supported by iron brackets, which were fastened to the poles by wrought iron bands passing around them and around the poles near the top. The proportions of the ingredients used in the manufacture of these poles is not obtainable, but the strength to resist strains was so inadequate that means were sought to overcome this fault, and the poles were a few years later replaced from time to time by the first reinforced concrete poles of which record is known, the reinforcement consisting of 3″ x 3″ pine cores, extending throughout the length of the poles. The concrete poles, it is understood, were used because the available wooden poles were very short-lived by reason of the ravages of insects. The poles with wooden reinforcement evidently were not attacked by the ants soon enough to prevent the cores from swelling and cracking the concrete so that the first pattern of reinforced poles was not an appreciable improvement over the solid pole. After being used for a few years the disruption of both classes of poles was such that they were practically abandoned, they having been replaced as occasion required by other patterns until, in 1888, there were only about twenty of the original poles standing, one or two of which still remain erect on the line of that road.

(*To be Continued.*)

TURKEY TO INSTALL TELEPHONES IN THE LARGER CITIES.

REPORTS from Beirut by United States Consul-General G. B. Ravndal state that the prohibition upon the use of electricity which formerly prevented the introduction of telephones into Turkey has recently been removed. Under the new conditions it is likely that concessions for telephone systems will soon be granted in at least the larger cities. It is said that as yet the Ottoman Empire has no cities equipped with telephone service. Consul-General Ravndal furnishes the information that applicants for franchises should make application to the Public Works Department in Constantinople. Applications will probably be more likely to succeed if made in person, or by a proper representative.

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WANTED—Telephone workmen; 3 foremen, 30 linemen, 6 cable splicers and 10 outside trouble men, to take places of strikers. Permanent positions at good wages for first-class men. State experience and give reference when applying. National Telephone Company, Wheeling, W. Va. 847

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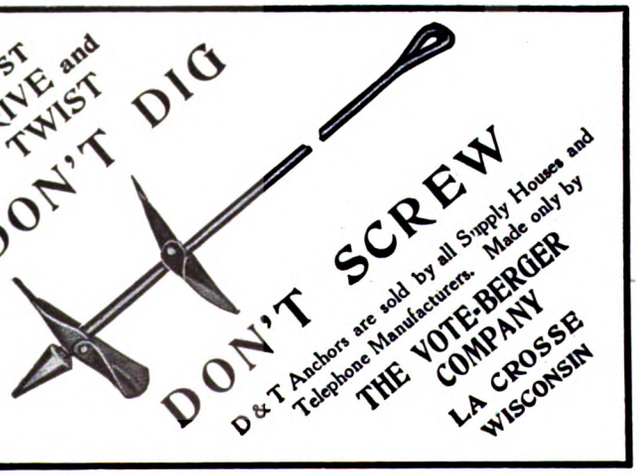
WANTED—Young men who are high school graduates and have had one or two years' experience in telephone work, or who are technical graduates, to enter our apprenticeship course in Automatic Telephony. Call or write. Automatic Electric Co., Van Buren and Morgan Sts., Chicago, Ill. 855



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Your Question—Our Answer

MAGNETO LAMP SUPERVISION.—(875.)

I would be greatly obliged if you would give me information on the following in an early issue of your paper.

Is it possible to use glow lamps as clearing-out signals on a magneto board? The switchboard is wired metallic and the clearing-out drops now in use have a resistance of 1,000 ohms. R. F. H.

A way in which this might be accomplished would be by placing condensers in your instruments in series with the ringing coils and working a lamp with battery current through the medium of a relay. This system would necessitate a rather large expenditure for condensers, however, therefore we would suggest the equipping of your cord circuits as shown in Fig. 875. With cords wired as there shown you would provide for double supervision. The efficiency of this supervision depends, however, on how well you have trained your subscribers to "ring off," as unless this is done the controlling relay will remain inoperative.

The action of the supervisory feature of this cord circuit is as follows: Upon replacing the receiver upon its hook at the completion of a conversation the subscriber gives his generator crank the customary short "ring off" turn. The current thus generated passes over the line, through the condenser and one of the relay windings. This causes a flutter of the relay armature sufficient to close the circuit, including the supervisory lamp and the battery. The current flowing through the other winding of the relay, the line, the ringer coils of the instrument and the supervisory lamp holds the armature in the operative position and causes the lamp to glow, thus indicating to the operator that the conversation has been completed.

Upon removal of the plug from the line jack this circuit is broken and the armature of the relay drops back to the normal position.

The 2 M. F. condenser in series with each of the strands of the cord circuit prevents the current of one generator from "throwing" the relay of the opposite cord, while the high potential alternating voice currents pass through the condensers readily.

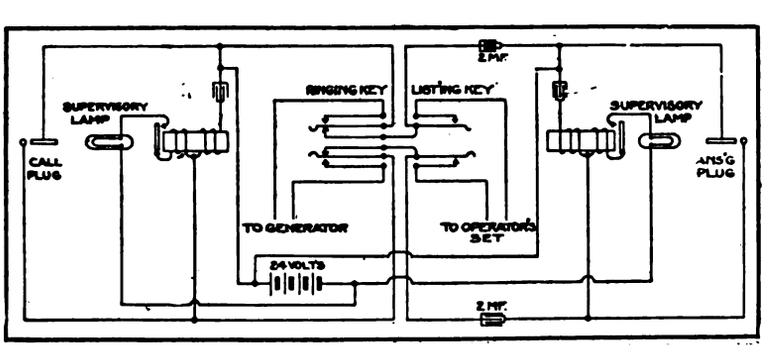

Fig. 875.

TESTS FOR PURITY OF STORAGE BATTERY ELECTROLYTE.—(876.)

We have recently received a consignment of sulphuric acid for use in our storage cells which does not appear to give the same results as former shipments and we have our doubts as to its purity. Kindly advise us through the columns of your valuable paper what impurities may be expected in acid, and tests for determining whether such exist or not. O. A. W., Missouri.

The impurities which are most likely to be in the acid and for which tests may be readily made are: Chloride or free chlorine, the salts of iron, copper, mercury, and the nitrates. Particular care should be given to the securing of assurance of the manufacturers that the acid is manufactured from pure sulphur and not from iron pyrites.

The test for chlorine or chlorides is made by taking a test tube partially filled with electrolyte and dropping into it a few drops of solution of nitrate of silver. If chlorine or its salts are present a curdy white precipitate of silver chloride will appear. This chloride turns to a violet tint on exposure to light. If the clear liquid be poured off this white precipitate and strong ammonia be poured on it it will dissolve.

Test for iron: The presence of ferrous salts in the electrolyte is shown if a dark blue precipitate falls down upon the addition of a solution of the prussiate of potassium. If ferric salts are present in the electrolyte, a solution of yellow prussiate of potassium will give a blue tint. Consequently, if into two test tubes, one of which contains a few drops of yellow prussiate and the other a few drops of red prussiate, a little electrolyte be poured, the two tests can be made at once. If the impurities be present in small quantities there will not be a precipitate formed, but a bluish-green coloration will result.

To test for copper, place a small quantity of electrolyte in a test tube and add an excess of strong ammonia. If copper is present a bright bluish tint will be given to the mixture. If in large quantities, a chocolate-colored preparation will be formed upon the addition of a solution of yellow prussiate of potassium.

If mercury is present, the mercurous salts will give an olive-green precipitate with iodide of potassium. To test for nitrates, some diphenylamine should be dissolved in a small quantity of concentrated, chemically pure, sulphuric acid and placed in a test tube. A small quantity of electrolyte is then dropped carefully in the same tube. If a blue color results, nitrates or nitrites are present. Traces of nitrates are very objectionable, as they cause a surprisingly rapid deterioration of the plates.

In the mixing of electrolyte none other than distilled water should be used.

SULPHATED STORAGE BATTERY.—(877.)

I have eleven cell storage batteries, known as type E-5. For the past three or four days I notice that the sixth, about the time the charge should begin, does not read anything on the voltmeter. I can then charge it with the rest of the batteries, and after the charge it will not show any difference from the rest of the batteries in reading under ten hours. Then for the next ten or twelve hours it will gradually drop off in voltage to zero, but at the same time the specific gravity of the electrolyte is 1,200. Will you please explain to me the cause of the above trouble? I have inspected the cell very carefully and find the plates intact. Can I clear the trouble by charging all my batteries, then cutting the sixth one out until I charge again, and then cut it back and charge with the rest of them? Will you please tell me how to determine how often and how long a set of batteries should be charged, and is that governed by the discharge per hour? C. F. L.

From the description you give of your trouble it would appear that the cell mentioned is sulphated, that is, the plates are inactive and practically incapable of being charged. This might occur from any one of a number of causes, and may be remedied by carefully scraping the plates. The faulty cell should then be charged at a low rate, about one-half normal, for a long period. In this way, by fully charging and then partially discharging the cell for a number of times, the unhealthy sulphate will be gradually eliminated. If your cell is only slightly sulphated the latter treatment will be sufficient without scraping. By adding a small quantity of sodium sulphate or carbonate to the electrolyte the cure of the cell will be hastened. However, in this case it will be necessary to empty the cell, thoroughly wash it and add fresh electrolyte after the plates have been restored to their proper condition. The use of this material is, however, rather hazardous, and should not be undertaken except by a thoroughly experienced battery man.

In relation to the length of charge and frequency, we would say that this depends entirely upon the size of the cells, ampere hour capacity and the rate of discharge. To determine the proper figures it would be necessary for us to have a complete set of well kept records of your battery. These records should show the length and rate of charge, the rate of discharge, that is, the current consumed in the operation of your plant during a given period and any additional data you may be able to give. If you can send them to us we shall be pleased to give you detailed information.

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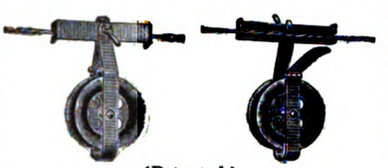
Why Should You Buy Security Conduit Rods?

Because they're the only successful coupling made; because they join instantly and easily; because they're cheap and save cost for repairs; because they're better designed; because they're lighter than any other; because they're not negotiable at junk yards and because they never jam or stick at the wrong moment.

Why Should You Buy Security Cable Trolleys?

Because they're the **only** kind made that will take **any** size cable without jamming on the cable; because they last forever; because they're impervious; because they never break, crack, split or slip; and because they're cheap. Will you write today for further facts and prices? Mention the Security Book.



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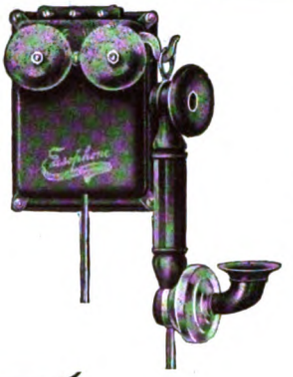


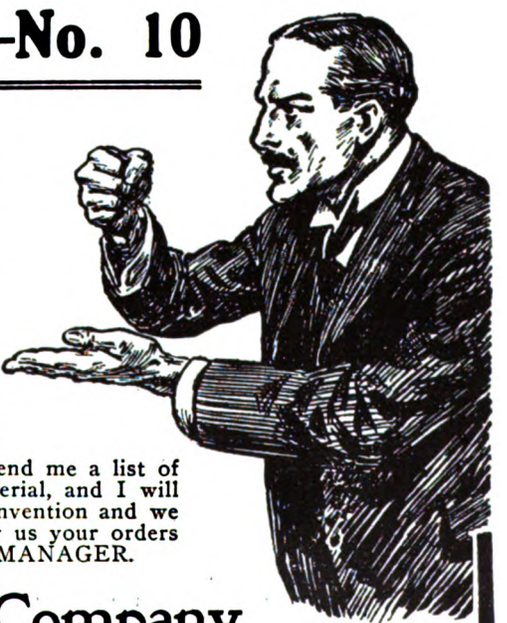
The Exchange Manager sees Lowest Maintenance Cost, Increase in Number of Subscribers, Demand for Hand Telephone.

Easophones

The WIRE and TELEPHONE COMPANY of AMERICA

ROME, N.Y.

Talks With The Buyer—No. 10



Well, the Glorious Hurrah of the National Convention is over. I will have to wait a minute to catch my breath. There was the enthusiasm of numbers, the glowing reports of success in the field, the interesting exhibits, described in detail on other pages of this paper, that one round of pleasure at Sans Souci Park, plenty to eat and witty speeches at the banquet, and the side trips of which no mention will be made. But, then, you were there, of course. If you were not, you missed the time of your life.

DID YOU GET YOURS?

If you were at the Convention you must have been in our exhibit. If so, you "got yours." If you were not at the Convention write me and I will send it to you. Right over the mysterious box in our exhibit there was a sign which said: "We Are Not In The Advertising Business. We Advertise To Get Business," which is the moral of this story.

When you write and tell me you were not at the Convention, send me a list of your telephone requirements, either instruments or construction material, and I will quote you prices when sending you "yours." If you were at the Convention and we had an opportunity of talking over matters, I know you are sending us your orders already.

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From Here and There

NEW YORK COMMITTEE REPORTS IN FAVOR OF INDEPENDENT TELEPHONE FRANCHISES.

ON June 14th the Board of Estimate for the city of New York considered the application of the Atlantic Telephone Company for a franchise to operate an Independent telephone system. After the hearing, seven of the eight members of the Board voted in favor of the franchise. This does not absolutely assure that it will be granted, as this hearing was held by the Board sitting as a committee of the whole, and the members must again consider the matter and take official action upon it after hearing the report which they, as a committee, will make to themselves as the Board.

This action follows a recent report to the Board by Corporation Counsel Ellison, in which he expressed his opinion that the city has no right to grant a perpetual monopoly of telephone service. In this opinion he stated that if for any reason it should appear best for the city to make a grant to the existing telephone company, this should not be a bar to the future granting of a similar franchise to a possible competitor.

MUNICIPAL ELECTRICIANS TO MEET AT NORFOLK, VA., IN AUGUST.

AUGUST 7th, 8th and 9th have been chosen as the dates of the meeting of the International Association of Municipal Electricians, which will be held at the City Hall, Norfolk, Va. This city has been selected as a meeting place not only on account of its convenient geographical location, but also because attendance here will give the delegates an opportunity to visit the Jamestown Exposition without inconvenience. The papers selected for this meeting are as follows: Electrical inspections and records; Modern application of storage batteries; The value of volt and ammeter tests for insulation; A modern fire alarm central office; Operation of a municipal electric light plant.

Further details may be obtained by writing to Frank P. Foster, secretary of the association.

HOME TELEPHONE COMPANY GETS TO WORK QUICKLY AT NASHVILLE, TENN.

THE Home Telephone Company began active work upon its Nashville plant last week. In the residential section poles are being erected and crossarms adjusted preparatory to stringing the wires. Large purchases of supplies indicate a determination to push the work to rapid completion. The conduit system now being constructed in the business district is controlled by the city, and the Home company has been given the same rights as the Cumberland company, the Postal and Western Union Telegraph companies.

The Home company is preparing to take care of twice as many patrons as the Cumberland company now has in the city. Long distance service is now being given from Louisville, Ky., to Nashville, and from Franklin, Tenn., to Birmingham, and the gap between Nashville and Franklin is being closed by a line now under construction.

PROGRESS ON INSTALLATION OF GOVERNMENT TELEPHONES IN MANITOBA.

DEFINITE plans have now been made by a number of the Manitoba municipalities which have decided to install their own telephone systems. As is well known, these will be connected with other parts of the province by the long-distance lines to be built by the Manitoba Government. The municipalities which have decided to install their own systems are: Woodsworth, where there will be three exchanges throughout the municipality to handle the work; Brenda with three exchanges; Victoria with one exchange; Wallace with three, and Hamiota and Blanchard with one each. A number of other municipalities are now taking the matter up and will arrive at some definite understanding before the end of the month. The rural systems, where built by the municipality, will be under municipal control. The Provincial Government will furnish all material for the work so that the systems will be in working order by November 1 of this year. The rural systems which have already been decided upon involve the building of over 3,000 miles of pole lines.

So far nothing definite has been decided regarding the route of the long-distance lines to be built by the Government, but it is reported that one line will run to the extreme southwest portion of the province, while another will run to the northwestern corner. The long-distance system will include three trunk lines, involving the construction of some 2,500 miles of pole line, materials for which are already being ordered and will be on the ground very soon.

MARRIAGE OF FRANK L. BEAM.

FRIENDS of Mr. Frank L. Beam, president of the Ohio Independent Telephone Association and vice-president of the International Independent Telephone Association, are congratulating him upon his marriage to Miss Anna Bogardus, daughter of Mr. W. P. Bogardus of Mt. Vernon. On June 12th the wedding, which was only attended by near relatives, took place at Mt. Vernon, where Mr. and Mrs. Beam will continue to reside after their return from the journey which they are now taking.

ENJOYABLE OUTING OF PITTSBURGH TELEPHONE PEOPLE.

EMPLOYEES of the Pittsburgh and Allegheny Telephone Company, at Pittsburgh, Pa., with their guests, had a most enjoyable outing on Saturday, June 15. About four hundred employees and one hundred guests took a boat early in the morning to Coney Island Park, which is situated on the beautiful Neville Island, about ten miles west of Pittsburgh, on the Ohio River. The scenery along the river is very fine in this region, and, in addition to the pleasure which was derived from watching for interesting sights, all hands enjoyed the music furnished by an excellent orchestra. The outing was arranged by J. G. Splane, president of the company, who has the reputation of always looking out for the welfare and comfort of his employees, and the company provided for the transportation and the music. The details of the outing were handled to the satisfaction of all concerned by the executive committee, composed of the following men: J. G. Splane, president; Ralph E. Flynn, director; L. Mühlheizer, chief engineer; C. F. Bender, auditor; T. G. Davis, assistant treasurer; Frank Hart, contract agent; Fred J. Heavans, purchasing agent; E. W. Hatfield, superintendent of service; H. E. Webb, superintendent of toll department; L. P. Schneider.

Among the features of the programme were the ball game between the general office force and the outside employees, won by the former by the score of nine to five, and also dancing; the prizes awarded were as follows:

Prize Waltz.

First prize, $5.00, Miss Wickenhauser and Mr. Bell; second prize, $3.00, Miss Luella Goettman and Mr. Boyd; third prize, $2.00, Miss Elizabeth Barr and Mr. Tracy.

Buck and Wing Dance.

First prize, $5.00, Miss Marie Nielly; second prize, $3.00, Miss Genevieve Pender; third prize, $2.00, Miss Elizabeth Barr.

Cake Walk.

First prize, $5.00, Miss Elizabeth Barr and Mr. Gleason; second prize, $3.00, Miss Mamie McNulty and Mr. Foster; third prize, $2.00, Miss Margaret McNulty and Mr. Laber.

The character of the gathering and the feeling of those who participated seems to have been hit off admirably by a reporter for the Pittsburgh *Dispatch*, who headed his account of the meeting with the quotation "Is everybody happy?" and the reply given unanimously by all of the company's employees and their guests, "Everybody is happy!"

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Our experience and voluntary testimonials from our customers cause us to believe that we are making a telephone that in *ringing* and *talking* qualities is superior to anything on the market.

With your permission we will be glad to send sample telephones and let them, under your installation, tell the story.

Long Distance Telephone Mfg. Co.

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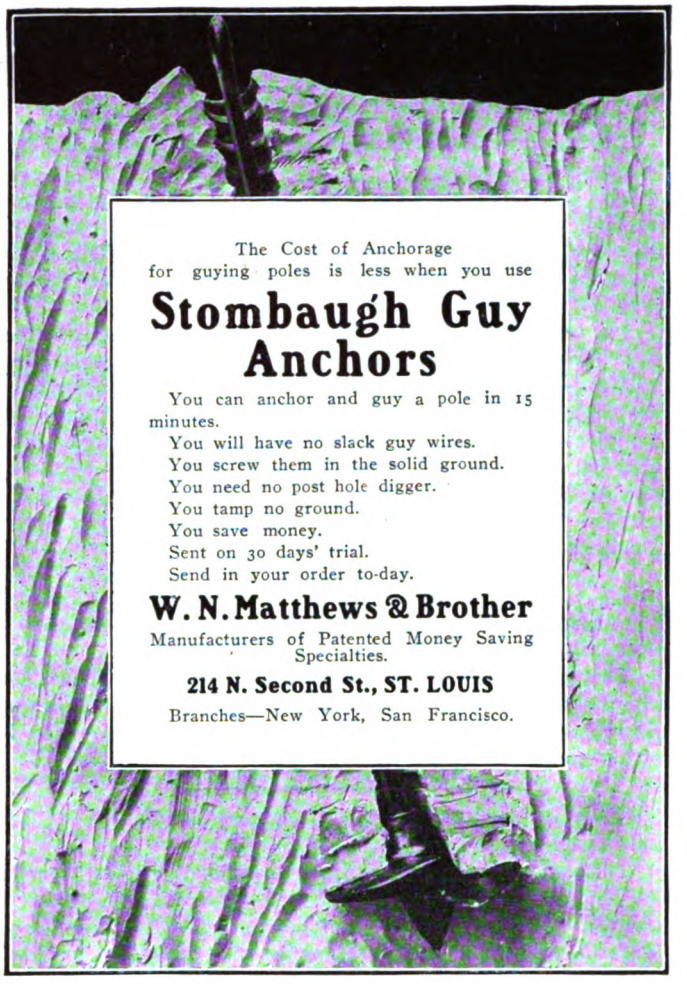

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You will have no slack guy wires.
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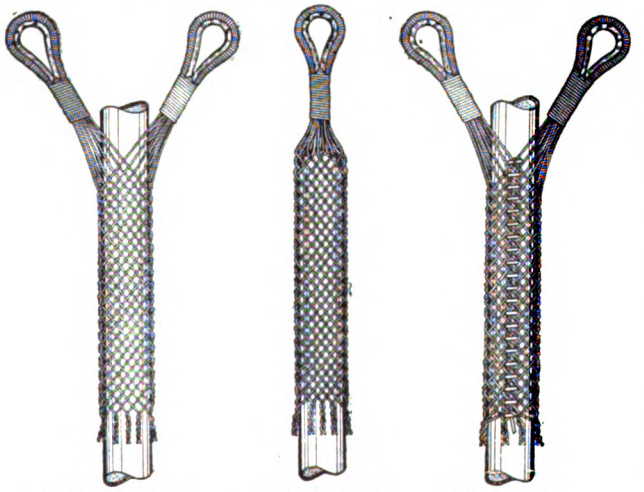

DOUBLE EYE. SINGLE EYE. SPLIT GRIP.

And the harder the pull, the tighter they hold on. They pull cable in or out of ducts, pull up slack, pull out a cable that is broken flush with the mouth of the duct, and do various other things as well. No injury to the sheathing of the cable, however.

Send us your name on your letterhead and we will send a sample.

Write to-day.

UNIVERSAL CABLE GRIP CO., Syracuse, N. Y.

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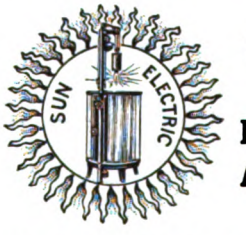
Exchange Layouts, Toll Line Diagrams and Power Plant Drawings Printed by Our Improved Process, Better, Quicker and Cheaper Than Possible to Secure Elsewhere.

WORK COMPLETED ON THE JUMP



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With the Inventors

REINFORCING TRANSMITTER.

Charles Newman, Elizabeth, New Jersey, patent 850,484, April 16, 1907.

This invention comprises an electro magnet, an armature thereof, having attached to stylus and two graphite points, two mercury retaining cups, and a wax cylinder, the whole in conjunction with a transmitter and battery and a receiver and battery.

The transmitter circuit includes a battery and the electro magnet. The receiver circuit includes a battery, the graphite points and the mercury cups. The inventor's object is to impart to the magnet armature an accelerated movement by means of the rotational force of the cylinder against the stylus, thus increasing and decreasing the resistance between the graphite points and the mercury in a wide field and causing a corresponding flow of current through the receiver which he claims would be greater than is possible in the customary arrangement.

RECEIVER HOLDER.

Delzon G. Hobby, Albion, New York, patent 850,886, April 16, 1907, assigns one-half to Fred L. Ferris, Albion, N. Y.

This invention comprises an arrangement of levers, etc., for holding a telephone receiver to the ear during conversation, thus leaving the hands of the subscriber free for other purposes.

TRUNKING CIRCUIT.

Harry G. Webster, Chicago, Ill., patent 841,747, Jan. 22, 1907, and assigns to Kellogg S. & S. Co.

This patent relates to improvements over circuit described by W. W. Dean in application filed June 28, 1902, serial No. 131,581, consisting in so constructing and arranging the apparatus that pilot signals common to a plurality of trunks may be employed, whereby when one of the trunks is used and its signals operated the pilot signal is also operated, thus attracting more readily the operator's attention.

INTERCOMMUNICATING SWITCHING MECHANISM.

Samuel H. Couch, Boston, Mass., patent 846,827, March 12, 1907, and assigns to Superior Automatic Telephone Company.

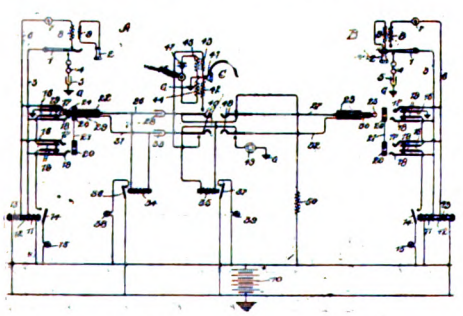
This invention relates to switchhook mechanism for intercommunicating telephones and adapted for use with system covered by Letters Patent of U. S. Jackson, No. 750,769, granted January 26, 1904.

SUPERVISORY SIGNALING SYSTEM.

H. G. Webster, Chicago, patent 853,287, May 14, 1907; assigned to S.-C. Tel. Mfg. Co.

In this system the supervising function of the cord circuit is governed by the high resistance relay 34.

This relay is of such high resistance as compared with the resistance of the line and the talking circuit at the sub-station *A* that sufficient current does not pass through the relay 34 to cause an actuation of its armature 36. Therefore the circuit in which the supervisory lamp 38 is included is not completed. However, when the talking circuit of the sub-station is broken

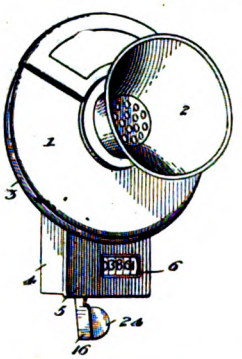


by the movement of its hook switch 1 the full strength of the battery 10 is supplied through the jack springs 17 and 18 and the relay 12, which is of sufficient strength to actuate the relay 34 and cause the lamp 38 to glow, thus showing the condition of the line in relation to the subscriber's instrument. The removal of the plug 22 from the jack 16 cuts off the supply of current from the relay 34.

TELEPHONE CALL REGISTER.

R. H. Manson, Elyria, Ohio, patent 854,830, May 28, 1907; assigned to Dean Electric Co.

This invention comprises a Veeder counting device arranged in a metal casing together with a steel resonating spring. The



metal casing 4 is provided with an extension on the back that will allow of the entire device being secured to the transmitter retaining arm, together with the transmitter 1. The purpose of the invention is the registering of telephone connections.

RELAY.

J. A. Birsfield, Rochester, N. Y., patent 853,292, May 14, 1907; assigned to S. C. Tel. Mfg. Co.

This patent covers the construction of a relay. The pole pieces are long and bent at right angles upon themselves to extend along the top of the coil. The front pole piece is bent at the end to an angle of 45 degrees, thus providing a knife edge upon which the slotted armature lever rests. The longer end of the lever extends backward over the rear pole piece, while the pressure of the contact springs is exerted against the shorter end.

By this arrangement the armature when closed tends to perfect the magnetic circuit of the relay.

TELEPHONE SWITCH.

J. S. Alsobrook, Wood Station, Ga., patent 854,552, May 21, 1907.

This patent is descriptive of a switch for use on telephones to permit two or more persons to use the same line during the same period without interference.

A further object of the inventor is to select, by means of this switch, the desired bell upon a line and also to exclude from the line all others than the person desired.

ELECTROTHERMAL SWITCH.

R. B. Hewitt and J. G. Nolen, Chicago, Ill., patent 851,420, April 23, 1907, assigned to F. B. Cook. This patent relates to a switching device, the actuation of which is due to the heating effect of an excessive current passing through a wire of high resistance. The device comprises a dome-shaped box in which is enclosed and sealed a diaphragm of isinglass or some other suitable insulating material. Mounted in the center of this diaphragm is a contact pin, around which is wrapped several turns of one terminal of one of the conductors. This pin makes contact with another in the upper portion of the sealed chamber, thus completing the circuit.

The action of the switch is due, the inventor states, to the fact that an excessive current passing over the coil of wire around the pin will heat the wire, which will communicate this heat to the pin, which will in turn heat the air in the sealed chamber, causing it to expand and force the diaphragm with its contact pin away from other point of contact.

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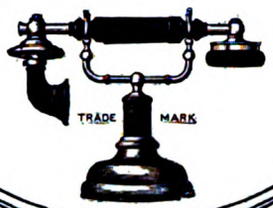
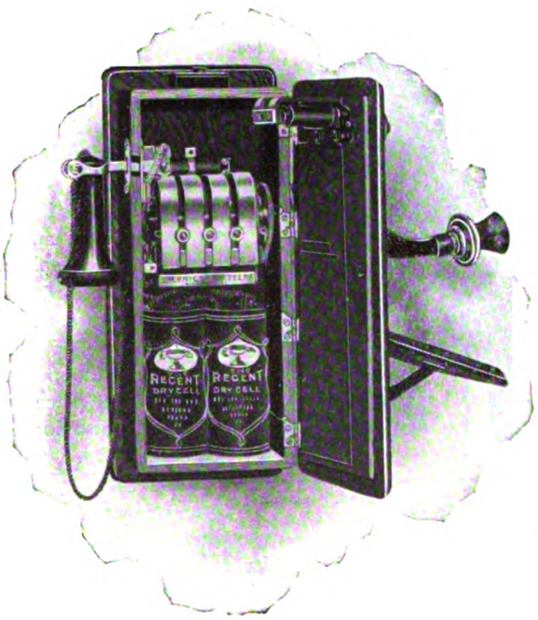


Ericsson Compact Cabinet Magneto Wall Telephone

The unusually small cabinet is made of well seasoned quartered golden oak or black walnut, having Ericsson special piano finish. A patented folding bracket supports the hinged shelf.

The magnets of the generator are made from bars of our own steel, which retains the magnetism longer than "Tungsten." Pole pieces of pressed steel are used in place of the usual cast iron field. An additional magnet may be added to the three or four bar generator. The gears are well ground and run noiselessly.

The frame of the induction coil is made of soft iron tubing riveted to the fibre heads. The windings are practically on the core, the only separation being a sheet of tracing cloth.



Perfect polarization is obtained by employing two magnets, one for each coil, instead of a single magnet.

The switch hook has German silver springs with contacts of platinum. The tension on the lever is adjustable.

Transmitter and receiver are Ericsson Standard types and insure perfect talking service. The transmitter is mounted on a movable arm of pressed steel.

Unless otherwise specified, the No. 2 receiver is furnished with this instrument. The binding posts are concealed and the whole encased in a genuine hard rubber shell.

The lightning arrester has two carbon plates insulated from the ground plate by two perforated celluloid disks. An enameled cover encloses the arrester and the line terminals.

An extra back protects the wiring from moist walls.

With each instrument is furnished two "Regent" dry cells.

L.M.ERICSSON TEL.MFG.CO.

BUFFALO, N.Y.

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From Shops and Factories

BANQUET OF STROMBERG-CARLSON SALESMEN.

FOLLOWING the Independent telephone convention in Chicago, the salesmen of the Stromberg-Carlson Telephone Manufacturing Company, who were in the city, held an informal banquet at the Grand Pacific Hotel. The East, West, North and South were well represented at this gathering. Everyone spoke encouragingly and with the greatest confidence for the future.

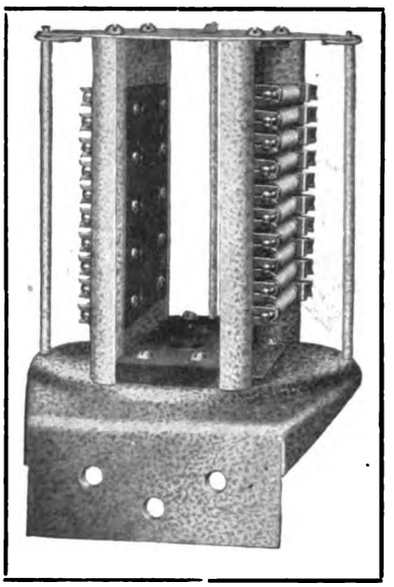
The salesmen present were William Bowen, Des Moines, Ia.; J. J. Nate, Minneapolis, Minn.; D. C. Gould, Omaha, Neb.; B. C. Hyde, Chillicothe, Mo.; E. P. Shafer, Indianapolis, Ind.; T. E. Wright, Clarksburg, W. Va.; P. D. Myers, Lincoln, Ill.; C. F. Speed, Texarkana, Tex.; J. B. Wilkinson, Louisville, Ky.; S. W. Menefee, Detroit, Mich.; H. A. Jones, Philadelphia, Pa. They were joined by the following members of the Chicago office force: A. M. Haubrich, E. C. Lewis, F. G. Hudson, R. S. Stephenson, H. J. Wilms, A. Johnson. C. W. Schafer, acting sales manager; H. C. Slemin, advertising manager, and O. M. Leich, assistant chief engineer, returned to Rochester and could not attend the banquet, as originally expected.

ALL METAL CABLE TERMINALS.

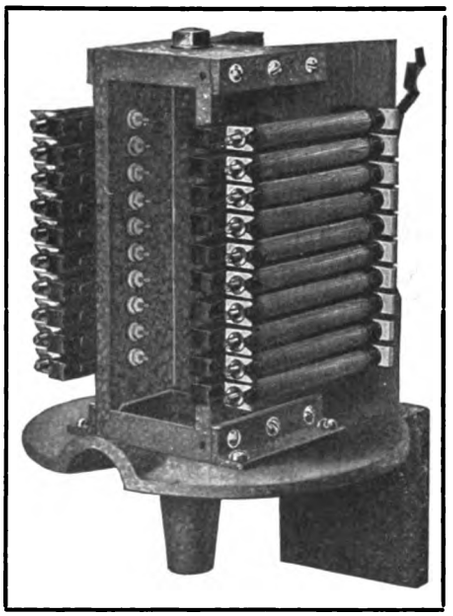
FRANK B. COOK is calling special attention to his "all metal" terminals, and claims that they have numerous advantages over the terminals which are made partly of wood, or those which are made entirely of wood. Cook's terminals are constructed entirely of pressed steel and no castings are used in their construction, which he claims obviates the possibility of breakage, which often occurs in terminals of the cast iron type.

The all metal terminals have absolutely no woodwork to swell, split or warp, and they cannot possibly burn up as wood strips or terminals sometimes do, when a high voltage or current goes through the arrester. It is stated that, as the metal boxes or panels in the metal terminals cannot warp, the covers will always slide up and down easily, and will not stick in damp weather. All the metal parts of the terminals are heavily galvanized. The cans or covers are made of sheet metal, which is also heavily galvanized, and the terminals are therefore exceedingly durable. The terminal has the tubular fuses and carbon lightning arresters, mounted on a sheet metal, moisture proof cable box, so arranged as to give ready access to the connections. The cable is brought in through the self-soldering nozzle shown in the illustration, and the conductors are fanned out and soldered to the clips inside the moisture proof cable box, the front plate or cover being removed for this purpose. Mr. Cook also makes this terminal so that the cable wires can be brought through a hollow rivet and soldered outside of the box.

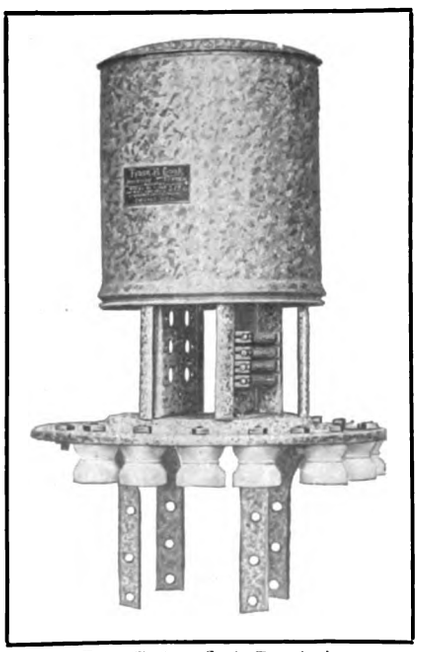
After the cable wires have been distributed and soldered, the front plate may be fastened on securely, a rubber gasket rendering the joints moisture proof. The back of the box, inside, is lined with an insulating fibre to prevent the cable wires from grounding on the box. As an additional protection to the cable, the plug in the top of the box may be unscrewed and the box filled with paraffine or compound, thus making the use of pot-heads unnecessary.



Cook Cable Terminal. Type T-16—Cover Removed.



Metal Terminal, Showing Cable Inserted. Cover and Front Plate Removed.



Type T-18. Cook Terminal.

The jumper wires are soldered to the rear connection, and are led out through holes in the baseplate.

The Types T-16, T-17 and T-18 are all made for use with pot-heads. As in all Cook types of terminals, they are equipped with special springs that hold the covers in place when they are raised, and which also lock them in place when they are down.

These three types of terminals are all equipped with individual protector mounts which can be put on as needed.

Any initial capacity can thus be secured and the capacity of the terminal can be increased as desired, by simply adding protector mounts.

Mr. Cook claims that his new and original method of forcing the fuse contact spring through the hard rubber blocks is a very radical improvement. The blocks are heated and the springs are forced through so that when the rubber has cooled again the springs are held absolutely rigid. This construction also prevents any surface leakage, on account of moisture collecting on the blocks between the springs.

Type T-16 is arranged for fastening to the side of the pole. Types T-17 and T-18 combine the terminal and distributing rings. The protectors can be mounted one pair at a time, and the porcelain knobs can also be added one at a time as needed.

Type T-17 terminals are arranged to fasten to the side of a pole, while Type T-18 is provided with means for proper fastening when mounted on the top. These several types are manufactured in order to meet all the conditions occurring in practice.

In addition to the terminals here described, Mr. Cook manufactures various other types, about which he will be pleased to tell prospective purchasers. Inquiries should be addressed to Frank B. Cook, 240 West Lake street, Chicago, Ill.

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THE STANDARD "HEMINGRAY"

All With The

"Patent Drip Petticoats"

The Hemingray-Glass Co., Office, COVINGTON, KY. Factory, MUNCIE, IND.

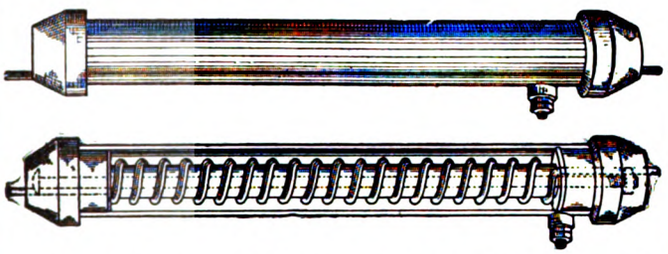
— ESTABLISHED 1848 —

A LIGHTNING FLASH

ON A TELEPHONE LINE MEANS NOTHING

PROVIDING THE LINE IS EQUIPPED WITH

The Sky Rocket Arrester



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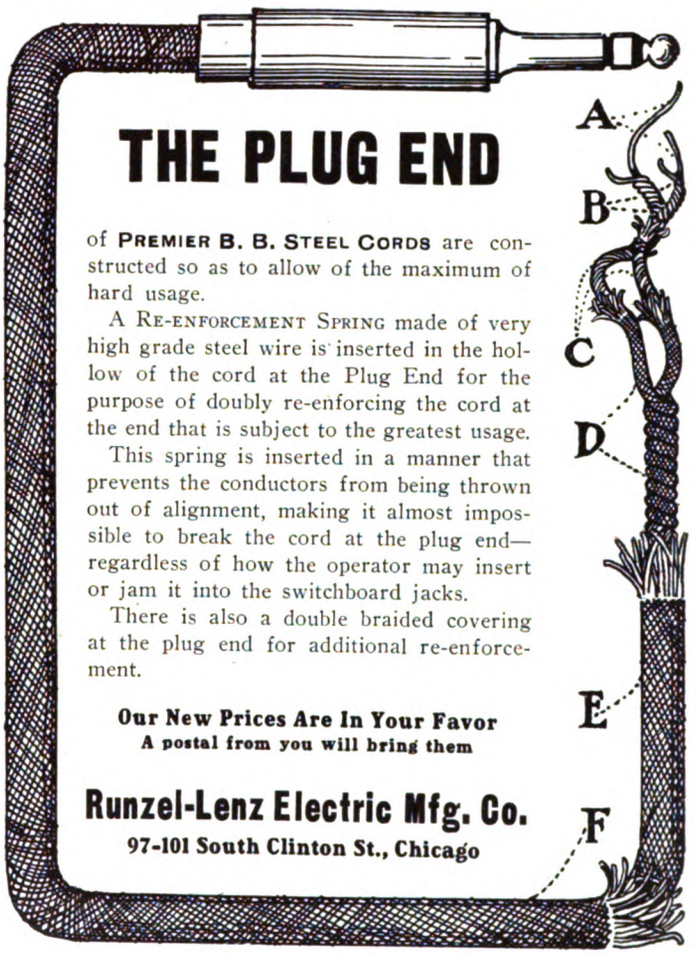

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Good News—and It's All New

NEW COMPANIES.

MOOREFIELD, Ark.—An Independent telephone company, to be known as the Moorefield Telephone Companw, has been organized at this city by F. M. Ham, M. E. Moore, J. M. Duncan, B. B. Conine, J. B. Massey, Geo. W. Wright, W. B. Morris and W. E. Dodd. It is its intention to construct a line from Moorefield to Batesville, and work has already been commenced.

SANTA MONICA, CAL.—Articles of incorporation have been filed by the Santa Monica Bay Home Telephone Company, of Santa Monica. It has an authorized capital stock of $500,000, of which $5,000 has been subscribed. The following directors have been elected: T. H. Dudley, W. S. Vawter, L. Blankenhorn, B. O. Kendall, L. C. Torrance.

ARCOLA, ILL.—The Aerial Transit & Telephone Company, of Arcola, Ill., has been incorporated with a capital stock of $1,000,000.

CULLOM, ILL.—The Vermillion Mutual Telephone Company No. 2, with its principal office at Cullom, has filed articles of incorporation. The capital stock is given at $1,500, and the incorporators are John Diebel, Charles Donnelly, William Frantz and Leonard Haag.

EL PASO, ILL.—The Panola Independent Telephone Company, of El Paso, has filed articles of incorporation. It has an authorized capital stock of $500,000, and the incorporators are Joseph Haas, William Burroughs and Geo. Pinkham.

JEFFERSONVILLE, IND.—An Independent telephone company, in which J. W. Fortune is actively interested, has been organized, and is about to apply for a franchise in this city.

SEYMOUR, IND.—A new Independent telephone company, to be known as the Citizens Mutual Telephone Company, has been incorporated with a capital stock of $10,000.

LOW MOOR, IA.—The Low Moor Telephone Company has been incorporated with a capital stock of $5,000.

SABETHA, KAN.—An Independent telephone company is being organized by the business men of Sabetha, and $6,000 has already been subscribed. Among those actively interested in the new enterprise is H. M. Baldwin, of Seneca, he having been engaged to draw up incorporation papers, etc.

LEITCHFIELD, KY.—An Independent home telephone company, whose stock is to be owned exclusively by local people, is being organized in this city. It is the company's intention to erect four lines from Leitchfield, extending to Pearman, Peonia, Short Creek and Duff. In addition, several toll lines are to be built, and connections effected with the Hardin and Breckinridge county Independent exchanges.

SYMSONIA, KY.—The Symsonia Telephone Company has been incorporated with a capital stock of $2,000. Among the incorporators are B. A. Wallace, E. T. Wallace and J. T. Draffen.

MUNISING, MICH.—An Independent telephone company has been formed at Munising. A franchise has been secured by Dr. G. A. Trueman, and work on the system will be commenced at once.

GASCONADE, MO.—The Farmers' Independent Telephone Company has been organized, and work on its system commenced.

LINCOLN, MONT.—The Gould-Lincoln Telephone Company, which is to extend between Lincoln and Silver, has been incorporated. It has a capital stock of $10,000, and the incorporators are H. L. Miller, J. A. Russell, of Chicago, and R. R. Johnson, of Los Angeles.

CHARLOTTE, N. C.—A charter has been granted to the Black Mountain Telephone Company, of Black Mountain, N. C. The authorized capital stock is $50,000, of which $25,000 in preferred stock can be issued and $25,000 common stock, but the company is to begin business with $20,000. The incorporators are J. D. Murphy, M. L. Reid, J. H. Tucker and others.

MT. AIRY, N. C.—The Mt. Airy Telephone Company, which was organized some time ago, has filed articles of incorporation, and expects to install and operate local and long distance telephone systems. The capital stock is placed at $50,000, and the incorporators are E. C. Hines, J. A. Hadley, W. E. Merrim and others.

FILLMORE, N. D.—The farmers between Esmond and Fillmore have organized an Independent telephone company, to be known as the Fillmore Farmers Telephone Company. It intends to construct lines between Esmond and Fillmore. The following officers have been elected: O. Vold, president; John Steenerson, treasurer; B. S. Amdahl, secretary.

GLEN ULLIN, N. D.—An Independent telephone company, whose lines extend between Glen Ullin and Leipsig, has been incorporated by L. A. Tavis, W. T. Moore and Carl Pribbenaw. The company, which is known as the Tavis-Moore Telephone Company, expects to build lines out from Leipsig in a number of directions, serving the people in the southern part of the county.

ROCKLAKE, N. D.—An Independent telephone company has been organized at Rocklake.

WILTON, N. D.—The Farmers Mutual Telephone Company, Wilton, N. D., has been incorporated by C. B. Flinn, George Mathison, W. O. Miller and others of this city.

LYRA, O.—The Lyra Independent Telephone Company has been organized, and the following officers elected: M. W. Bandy, president; C. E. Hayward, secretary; Tiffin S. Collett, treasurer. It is the company's intention to build lines from Lyra to South Webster, and to eventually connect with the Home Telephone Company's lines at Wheelersburg.

EL RENO, OKLA.—A new Independent telephone company has been organized at this city to operate in competition with the Bell company. The new company will have a capital stock of $100,000. It will have direct connection with the Canadian Farmers' Telephone exchange. The organizers of the company are all El Reno people.

SALEM, S. D.—The farmers northeast of Salem have organized a telephone company to be known as the Center Telephone Company, and are now building lines which will connect them with Salem and other points.

INDIAN CREEK, TEXAS.—A charter has been granted to the Indian Creek Telephone Company, of Indian Creek. It has a capital stock of $2,000, and the incorporators are T. J. McBride, S. Martin, W. J. McAden and others.

LEBANON, VA.—The Lebanon Telephone Company, of Lebanon, has been incorporated with a capital stock of $3,000. Among the incorporators are R. S. Meade, E. S. Finney, C. C. Alderson, V. B. Gilmer, L. L. Bays, O. S. Burns, all of Lebanon.

OAK GROVE, VA.—Articles of incorporation have been filed by the Rappahannock Telephone Company, of Oak Grove. It has an authorized capital stock of $5,000. The following officers have been elected: D. H. Griffith, president; H. W. Coates, vice-president; Charles Hayes, secretary; R. B. Spilman, Andrew Flemer, W. D. Wirt, F. W. Alexander, directors.

PENAWAWA, WASH.—The Penawawa Telephone Company, with a capital stock of $2,500, has filed articles of incorporation. The incorporators are Silas M. Smith, W. F. Adams, H. S. Smith, F. A. Lee and Miles Champlin.

PARKERSBURG, W. VA.—The Rural Telephone Company, of Parkersburg, has been incorporated with a capital stock of $10,000. Among the incorporators are E. D. Ball, of Elizabeth; F. L. Hopkins, of Palestine; A. C. Farnsworth, of Eatons; P. B. Vanhorn, of Toppins Grove, and F. C. Merrell, of Parkersburg.

BAGGS, W. VA.—On account of the poor service said to have been rendered by the Bell company in this city, the citizens have organized an Independent company, and will build a line from Baggs to Wamsutter.

PINCHER CREEK, ALB., CAN.—An Independent telephone company is being organized at this city. Among those interested are S. W. Berry, J. E. Woods and others.

BLENHEIM, ONT., CAN.—A local telephone company has been formed by the business men of Blenheim, whose intention it is to build lines from this city to Mull, Guilds and other places.

MARKHAM, ONT., CAN.—The Uxbridge & Scott Independent Telephone Company has been formed at this city for the purpose of building a telephone system in Mount Albert, Markham, Sunderland, Stouffville, Claremont and other places.

UXBRIDGE, ONT., CAN.—A new Independent telephone company is being organized at this city, in which W. S. Ormsden and R. J. Moore are actively interested.

FRANCHISES.

DUNDAS, MINN.—The Northfield Telephone Company, of Northfield, has been granted a franchise to construct a telephone line through Dundas.

WEATHERFORD, TEXAS.—Permission to erect and maintain a telephone line from Weatherford along the Weatherford and Balch and the Bethel and Harmony public road has been granted to W. K. Neal.

FINANCIAL.

TAMPICO, ILL.—At a recent meeting of the Tampico Farmers' Telephone Company it was decided to increase the capital stock from $6,000 to $10,000.

BEDFORD, IND.—The Bedford Home Telephone Company has increased its capital stock from $75,000 to $250,000. The additional capital is to be invested in improvements and extensions of its system. E. B. Thornton is president, and Chas. W. Lanz, secretary.

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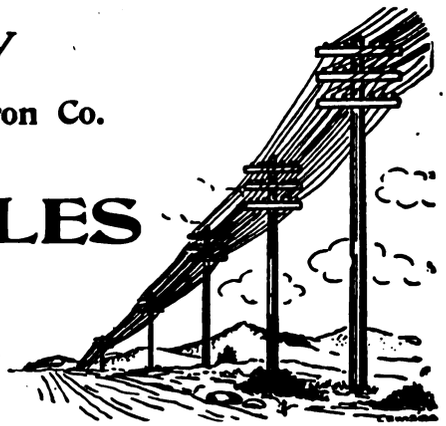

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MILWAUKEE, WIS.

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Good News—And It's All New

BROOKSVILLE, KY.—The Bracken County Telephone Company has increased its capital stock from $10,000 to $20,000.

ST. PETER, MINN.—At a recent meeting of the stockholders of the Nicollett County Telephone Company it was decided to increase the capital stock from $100,000 to $125,000, the increased capital to be used in making extensions to its plant. The company is also contemplating the purchase of the telephone lines from A. C. Buck, of Henderson, who owns and operates an exchange at Arlington, with toll lines to Henderson, New Auburn, Green Isle and Rush River.

MONTICELLO, MO.—The Citizens' Telephone Company has voted to increase its capital stock from $12,000 to $50,000.

JACKSON CENTER, O.—The capital stock of the Jackson Center Telephone Company has been increased from $25,000 to $40,000.

NUMIDIA, PA.—The Roaring Creek Valley Telephone Company, which operates a line between Numidia and Mill Grove, has declared a dividend of six per cent.

RIMOUSKI, QUE., CAN.—The Kamouraska Telephone Company has increased its capital stock to $250,000, and has been given power to extend its lines in Rimouski and Matane counties.

ELECTIONS.

EUREKA, IND.—At the meeting of the stockholders of the Luce and Ohio Township Telephone Company, held at Eureka, the following directors were elected: J. C. Haines, C. B. Laird, Loren F. Gage, Allen J. Payton, Jacob Weber, Adolph Egloff and C. W. Halbruge.

NEWAGO, MICH.—The following officers have been named by the Marengo Prairie Telephone Company: President, E. L. Hornbeck; secretary, George Gorman; treasurer, M. H. Angervine.

HALE, MO.—The Missouri Midland Telephone Company at its recent meeting at Hale elected the following officers and directors: P. C. Green, president; G. A. Marple, secretary and treasurer; L. Bartlett, I. H. Hendricks, William Forsythe, D. Zumbro, directors.

LINWOOD, NEB.—The directors of the Linwood Telephone Company are M. J. Rezac, Charles Homalka and John Kucera.

MISCELLANEOUS.

SARATOGA, ARK.—The telephone line running from Saratoga to Columbus has been purchased from the Nashville Telephone Company by Arthur Stoker, of Saratoga.

PEKIN, ILL.—At a recent meeting of the Citizens' Telephone Company it was decided to purchase the property and franchise of the Pekin Telephone Company, the purchase price being $100,000.

BOSTON, MASS.—At a meeting of the stockholders of the Metropolitan Home Telephone Company a permanent organization was effected, and the following officers elected: Colonel Albert Clarke, president; Albert L. Ireland, vice-president; James G. Ferguson, treasurer; Roger E. Miley, secretary.

COLUMBIA, TENN.—It is the intention of the Citizens' Telephone Company to reorganize with an authorized capital stock of $75,000. The new company proposes to establish a series of thoroughly up-to-date exchanges throughout the county.

PERSONAL.

C. M. ARMSTRONG has been appointed manager of the Central Union Telephone Company's exchange at Galena.

T. M. BRADFORD, formerly connected with the Traffic Department of the Central Union Telephone Company, has been appointed service inspector of the Bloomington, Ill., district of that company.

C. S. EDWARD, formerly connected with the Central Union Telephone Company in the capacity of service inspector, has accepted the position of traffic engineer with the Pioneer Telegraph and Telephone Company, Oklahoma City, Okla.

J. W. HOBBS has been appointed manager of the Central Union Telephone Company's exchange at Cairo, Ill.

H. L. MANOR has recently been appointed manager of the Independent Telephone Company's plant at Taylor, Texas.

L. O. TRUMP has been appointed manager of the Central Union Telephone Company's exchange at Athens, Ill.

With the Builders

PEKIN, ILL.—Among the improvements in its system planned by the Citizens' Telephone Company is the building of a line to connect with the Home Telephone Company of Canton. The Citizens company has recently constructed a line to Washington, giving connections to Eureka, Minonk, Roanoke, Metamora, Deer Creek and East Peoria.

FAIRMOUNT, IND.—The Citizens Telephone Company contemplates the extension of its rural lines.

REYNOLDS, IND.—New lines from Reynolds to other towns are to be erected by Dr. Besser, of Remington, who owns the local system at Reynolds, at which point he is also to establish an exchange.

GARNAVILLO, IA.—Improvements in its system at this city are being made by the Standard Telephone Company.

GARNER, IA.—The Garner Telephone Company, which is thoroughly overhauling its system at this place, expects also to make many improvements in its plant at Kanawha.

SIDNEY, IA.—The Farmers' Mutual Telephone Company is extending its lines to Hamburg.

ELLSWORTH, KAS.—Considerable construction work is to be undertaken by the Ellsworth Co-operative Telephone Company.

GOVE, KAS.—The lines of the Farmers' Telephone Company are being extended.

MINNEAPOLIS, KAS.—The Farmers' Telephone Company is building a line from Minneapolis to Culver.

BRIDGTON, ME.—Many improvements in its system at Bridgton are being made by the Ossipee Valley Telephone Company.

HOLLAND, MICH.—Work on the installation of its system is being carried on by the Citizens Telephone Company at this city.

MARQUETTE, MICH.—Many improvements and extensions in its system are planned by the Marquette County Telephone Company.

SAGINAW, MICH.—It is the intention of the Saginaw Valley Telephone Company to expend between $150,000 and $200,000 on its plant in this city.

BLACKDUCK, MINN.—A long distance telephone line from Blackduck to International Falls is to be constructed by A. A. White, of St. Paul, owner of the townsite of Littlefork and many other townsites throughout the Northwest.

LANCASTER, MINN.—The Kittson Telephone Company expects to extend its line from Lancaster to Bronson.

MEDFORD, MINN.—The Deerfield Telephone Company expects shortly to commence the construction of its lines at Medford.

NEW ULM, MINN.—Rural lines between Lafayette and Bernadotte and other points are being erected by the New Ulm Rural Telephone Company.

WINONA, MINN.—The Winona Telephone Company, which has just completed a new line to Stockton Hill, has under consideration the construction of several other new lines.

ST. JOSEPH, MO.—A new central energy system is to be installed by the Citizens Telephone Company. The plant will be a modern one in every respect, and is expected to represent an outlay of many thousands of dollars.

BAINBRIDGE, N. Y.—Many improvements and extensions in its system are being made by the Union Telephone Company.

FINDLAY, O.—Many improvements in its system are being made by the Home Telephone Company.

CONESTOGA, PA.—A line between Northern Joanna and Western Geigertown is to be erected by the Conestoga Telephone Company.

WESTERLY, R. I.—Among the extensions planned by the Westerly Automatic Telephone Company is a line over Berry Hill.

MART, TEXAS.—An exchange building, which is to cost in the neighborhood of $10,000, is to be erected by the Mart Telephone Company.

CENTRALIA, WASH.—The Home Telephone Company is considering the advisability of building a line from Centralia to Rochester.

CHIPPEWA FALLS, WIS.—The Melville Settlement Telephone Company, of South Siegel, is extending its lines in the direction of Chippewa Falls.

MISSION, B. C., CAN.—The Mission Independent Telephone Company is preparing to construct several more long distance telephone lines.

WINNIPEG, MAN., CAN.—The first long distance telephone line to be built by the Manitoba government is to run between Virden and Brandon, and from thence to Hamiota. Address Hon. J. H. Howden, minister of telephones, Winnipeg, Man.

WINNIPEG, MAN, CAN.—The Manitoba government has purchased a large site here upon which to erect a central telephone exchange for the system to be built by the government in Winnipeg. Hon. J. H. Howdin, minister of telephones and telegraphs, states that tenders will be called during the present month for the construction of telephone systems in Winnipeg and Brandon.

FORT WILLIAM, ONT., CAN.—The city council has voted $36,000 for improvements to the municipal telephone system. Address Mayor Whalen.

UNDERGROUND.

SULLIVAN, ILL.—Considerable underground work is to be done by the Mutual Telephone Company in this city.

LANSING, MICH.—It is the intention of the Citizens Telephone Company to place many of its wires underground in this city.

ATHENS, O.—The Athens Telephone Company is considering the advisability of installing a conduit system in Athens.

PHILADELPHIA, PA.—Among the improvements planned by the Keystone Telephone Company is the expenditure of $65,000 in conduit work.

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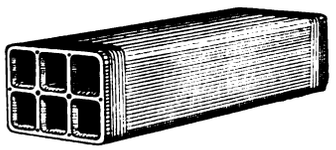
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Eastern Sales Office: MONADNOCK BLDG., CHICAGO, ILL.

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COMMERCIAL

We Have It!!

LEAD--LEAD--LEAD

Wiping Metal--1-2 & 1-2 Solder

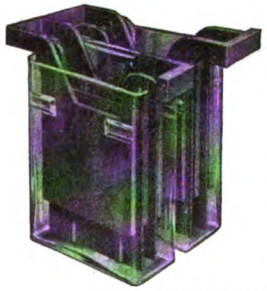
LEAD SLEEVING

Large or small quantities from stock. Ask for prices on complete list of cable splicing material and tools. Paraffine by the ounce or ton.

Commercial Electrical Supply Co.

15th STREET, ST. LOUIS, MO.

COMMERCIAL



GOULD COUPLE TYPE

Storage Batteries for private exchanges which require small amounts of current have proved to be universally satisfactory, being simple in construction and at the same time compact and easy to handle, requiring a minimum amount of care and attention.

We shall be pleased to have prospective purchasers send for our booklet, entitled "Gould Telephone Batteries."

SALES OFFICES
Boston—89 State St.
Chicago—Rookery Bldg.
San Francisco—Monadnock Building.
Toronto, Ont.—62 Wellington St., West.

Gould Storage Battery Co.

MAIN OFFICES
341-347 Fifth Ave.,
New York City.
Works, Depew, N. Y.

IMPROVE YOUR PAY

stations' service by equipping them with POOLE Lock-Outs. When one station is in use your long distance service won't be spoiled by having someone "butt in" at another station on the same line.

Particulars for the asking. Write for Booklet AL-2.

MOUNTAIN STATE ELECTRICAL CO.,

WHEELING, WEST VA.

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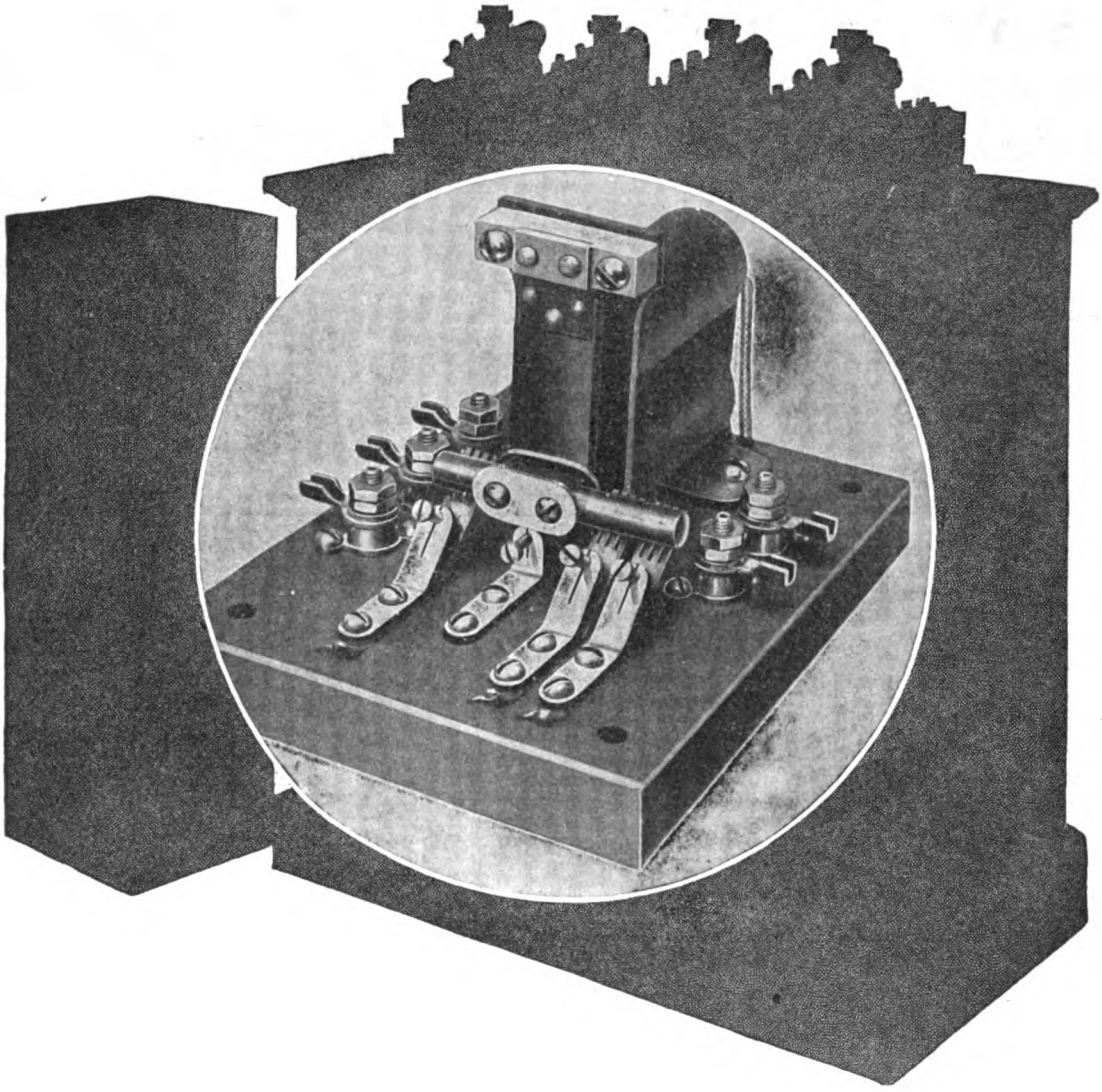
DEAN TELEPHONE APPARATUS

A Dean Electric Detail--Harmonic Converter Relay for Starting the Selective Vibrators



This Primary Circuit Closing Relay in our Harmonic Converter is for closing the circuits of the transformer primaries of the Dean Harmonic Converter, and is especially designed for small exchanges where dry cells are used for the ringing current. A minimum current consumption is imperative for party line selective signaling in the small exchange. This relay, operated by a circuit extending to special contacts on the ringing key at the switchboard, is entirely automatic, not in any way depending on the operator for its prompt and accurate action. It actually starts the selective vibrator and consumes absolutely no current except during the period that the operator is ringing the subscriber. Our folder No. 5 should be in your possession if you wish to have your selective ringing knowledge complete.

FACTORY AND GENERAL OFFICE, ELYRIA, OHIO
BRANCH OFFICE, Water Works Building, Kansas City, Mo.

THE DEAN ELECTRIC COMPANY
ELYRIA · OHIO

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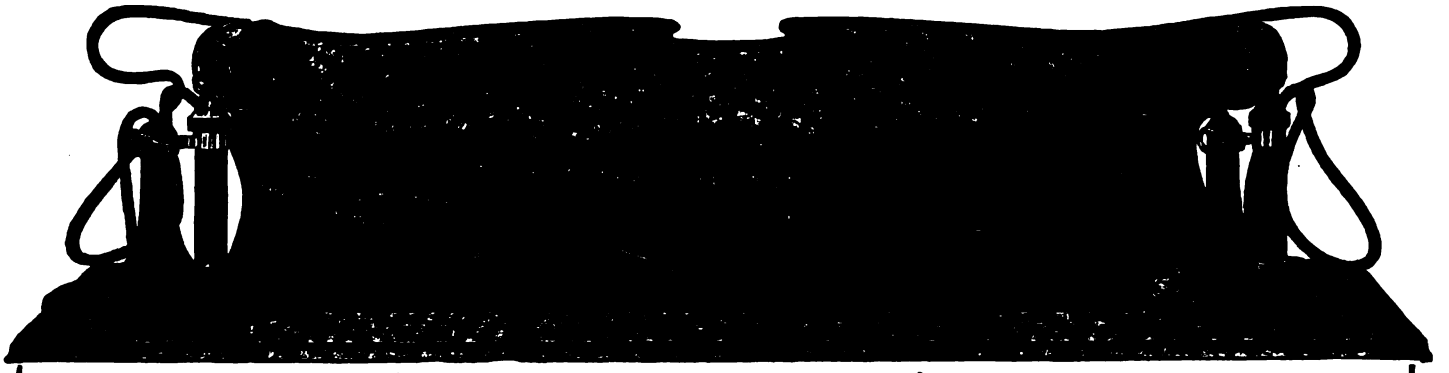
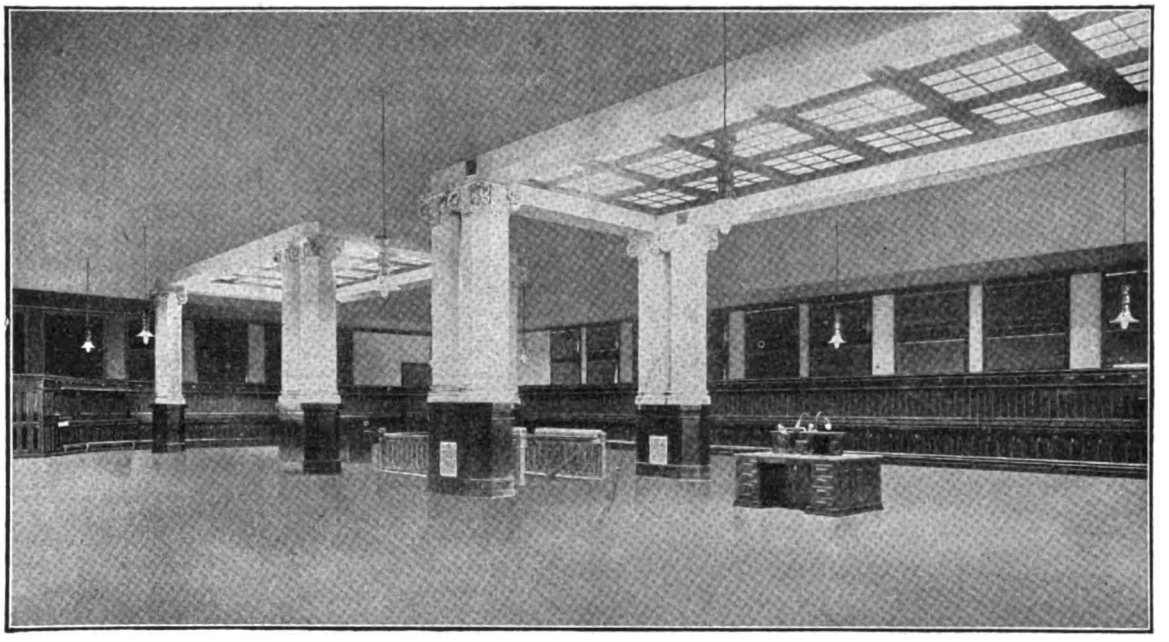


CENTRAL ENERGY MULTIPLE SWITCHBOARDS



Main Operating Room, Showing Main Switchboard from Section No. 43 to 108.

The Stromberg-Carlson Telephone Manufacturing Company has built and installed "Central Energy" Multiple Switchboards having an aggregate ultimate capacity of 503,900 subscribers' lines.

This 17,000 line Central Energy Full Multiple Switchboard is provided with lamp line signals and double lamp supervision signals, provisions being made also for a four-party line harmonic ringing system.

The present equipment is for 12,500 multiple subscribers now operating 10,000 Central Energy Four-Party Harmonic Wall and Desk Instruments of our manufacture.

Quality Apparatus gives the most rapid and efficient service—least expensive to maintain—excels in design and construction.

Our facilities permit immediate construction of the largest switchboards required and provide aptly for delivery of the smallest switchboards promptly.

"Central Energy"

Stromberg-Carlson Telephone Mfg. Co.

Rochester, N.Y. ··· Chicago, Ill.

"Central Energy"

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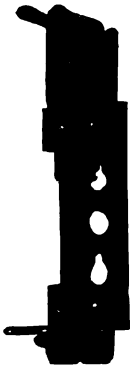
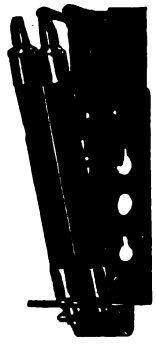
UNIT TYPE MOUNTED LINE FUSE



Mounting Plate is made up of pressed steel on which is mounted the German silver springs insulated by hard rubber blocks.



Protection is made up in units of one pair each equipped with fuses and carbons or fuses only.

No. 263

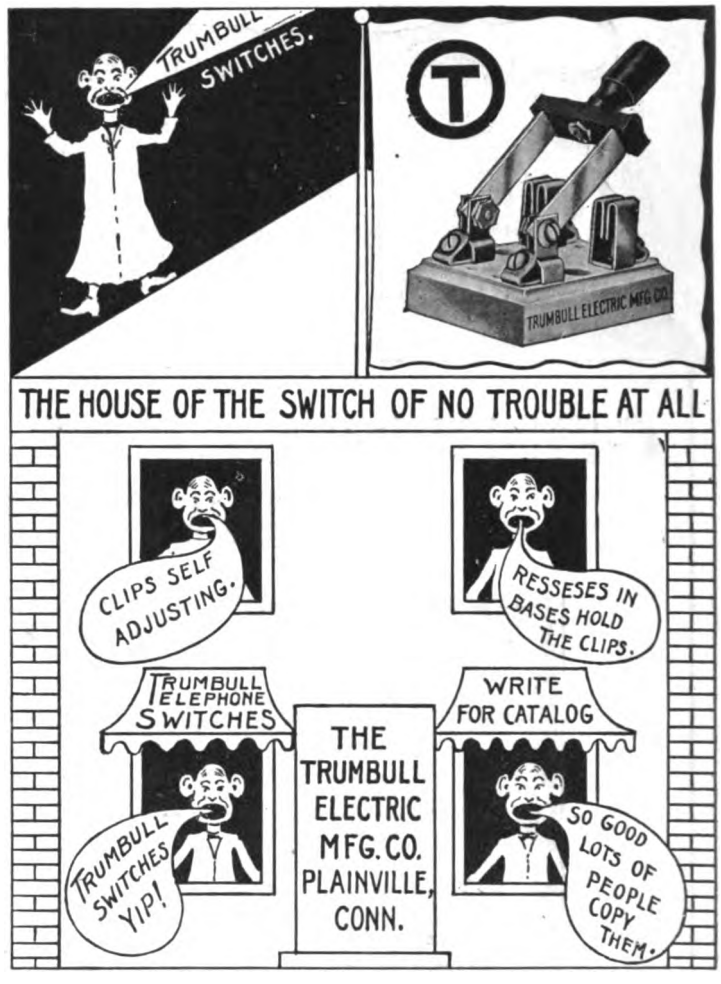
The Fuses are of the snap in type, easy to take out, made 1, 2½ or 5 Amperes.

The units are held on frame or strip by two screws making it easy to replace or change location.

Sterling "GOOD! GOODS"

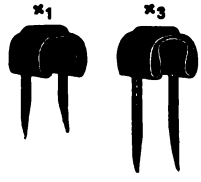
Equip your pole houses with the mounting strips and put on the protectors as required

STERLING ELECTRIC CO.
La Fayette, Ind.



Installation Expenses Reduced

by using Blake Insulated Staples instead of expensive cleats and screws for interior wiring.



Blake Insulated Staples

are cheaper than the screws used with wiring cleats, make a neater appearance and are more effective.

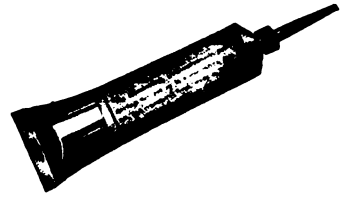
Insulating qualities excellent. Drive well too.

Samples on request.

Soldering Economy

is accomplished by the use of

Blake Tube Flux



The flux is always preserved in perfect condition, so that the last squeezed out of the tube is as good as the first.

Just the right size to be carried in the pocket. Always clean, never mussy.

Economical—Clean—Satisfactory

Sample Tube, 20c., Postpaid

WRITE FOR ONE TO-DAY

BLAKE SIGNAL AND MFG. CO.
246 Summer Street, BOSTON, MASS.

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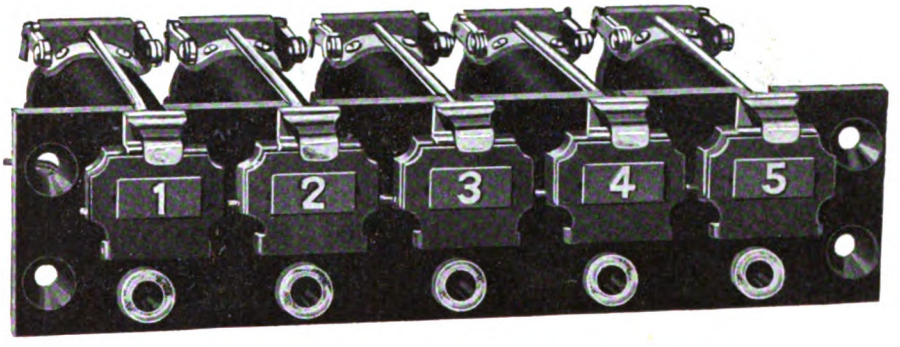
CENTURY
100% GOOD

One of Our Specialties
4-PARTY SELECTIVE RINGING
MAGNETO AND COMMON BATTERY

Write us for description and prices

We manufacture the most complete line of telephone apparatus in the world



OUR SELF RESTORING DROP WITH REMOVABLE COIL FEATURE EXTREMELY SIMPLE AND RELIABLE

CENTURY TELEPHONE CONSTRUCTION CO.
BUFFALO, N.Y., U.S.A.

TORONTO BUFFALO KANSAS CITY

Please mention THE AMERICAN TELEPHONE JOURNAL when writing to ADVERTISERS.

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KELLOGG SWITCHBOARD and SUPPLY COMPANY

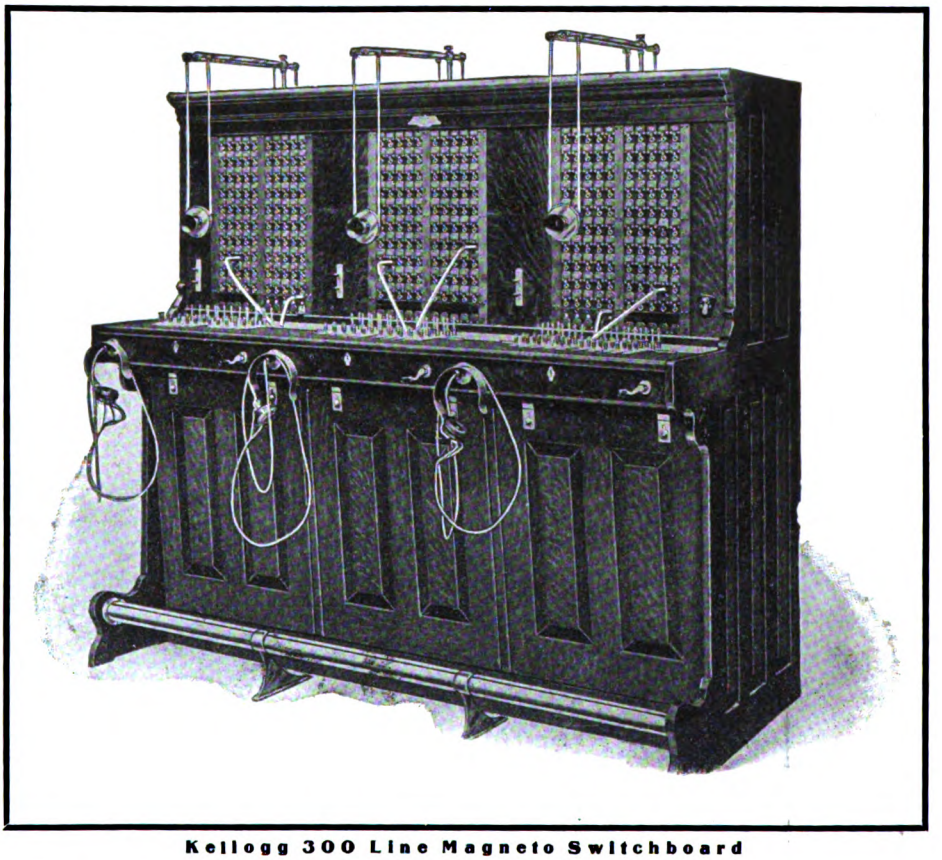
CONGRESS AND GREEN STREETS, CHICAGO, ILL.

Manufacturer of

MAGNETO AND CENTRAL BATTERY APPARATUS

Largest To Smallest Size Exchanges Thoroughly Equipped

Highest Awards Received



Buffalo 1901

St. Louis 1904

Milan 1906

Kellogg 300 Line Magneto Switchboard

SWITCHBOARDS, TELEPHONES, TELEPHONE APPLIANCES, POLES, SUPPLIES, AND LINE MATERIAL OF EVERY DESCRIPTION FURNISHED PROMPTLY.

BRANCH OFFICES:

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CORRESPONDENCE SOLICITED **WRITE FOR BULLETINS**

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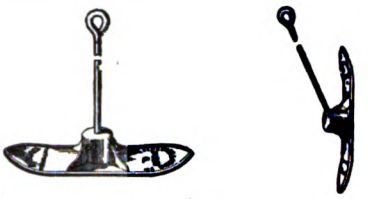

Hercules Anchor

(PATENTED)

The Iron Dead Man

Made in five sizes, from that for 20-foot pole to large one for extremely heavy strains, wrecking trains, etc.

They are the best anchor in every way for holding up heavy leads and round corners. Easy to set, pull against solid earth and will not creep.

As they are made of Malleable Iron, they are practically indestructible. All anchor plates guaranteed.

Send for descriptive circulars and prices.

Manufactured by

THE W. G. NAGEL ELECTRIC CO.

26-30 ST. CLAIR ST., TOLEDO, O.

SIMPLICITY

Note how easy it is to splice pairs when you use HARGIS CABLE SPLICING JOINTS. Note how easy it is to get into the joint in case you have to test out for trouble.

If you are stringing several lengths of cable and a storm blows up, you can get your cable ends into a moisture-proof HARGIS JOINT in no time and thus prevent moisture from getting into your cables. When the weather clears up, your lineman can go out and splice the pairs in each joint.

While an expert cable splicer is rigging up his platform, etc., to start to work on a horizontal joint, a lineman can wipe in a HARGIS JOINT. The lineman can have all his pairs spliced and be off to the next job about the time the expert splicer would be ready to begin wiping the second end of his horizontal joint.

Making a splice with a HARGIS JOINT is so easy that you don't need a cable platform. There is no need for a drip pan to catch the paraffine, because the HARGIS JOINT is submerged in the paraffine pot, and there is no waste. The moisture has to go out. No uncertainty.

SEND IN YOUR ORDER TO-DAY

W. N. Matthews & Brother

Manufacturers of Patented Money Saving Specialties.

214 North Second Street **ST. LOUIS**

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U. S. COMBINED

Cash Register and Pay Station

[The PIONEERS in this line]

THE BEST TELEPHONE SERVICE

Measured Service Pay Station

One Gong Only.

A cash ticket with every collection.

A tape numbered from 1 to 2,000 does the work.

Cash always accounted for.

No Errors,
No Disputes,
No Troubles.

It protects both patron and company.

It keeps collections right.

It makes you money.

Write at once for particulars and catalogue.

THE

United States Coin Register Co.

TOLEDO, OHIO

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THE ONE-SLOT FEATURE

appeals at once to the subscriber, because there is no possibility of losing the coin by inserting it in other than the proper place. This, together with other advantageous features embodied in the

LIVERMORE ONE-SLOT PAY STATION

places it in a class by itself.

All possible sources of trouble are eliminated in the construction.

The Livermore has only one coin slot.

It has no levers for the annoyance of the subscribers.

No levers, no springs, no clockwork, no air pumps, no knives, no push buttons, to become out of adjustment and provide trouble for the inspector.

A clear, easily distinguishable signal for each coin deposited, which the operator cannot mistake.

Other features of vital importance, too.

We want to tell you all about them. *Ask us today.*

LIVERMORE PAY STATION CO., 4 Bowker St., Boston, Mass.

Cut this out and enclose with a Postoffice or Express Money Order or A DOLLAR BILL, at our risk.

SUBSCRIPTION BLANK

.....190

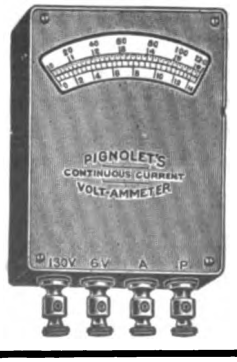
American Telephone Journal
100 William St., NEW YORK

Enclosed find.. .....for One Dollar ($1.00)
Subscription for One Year.

Name.....

P. O. Address.....

LOOKING FOR TROUBLE?



Suppose you have a line in trouble—grounded or open. You don't know the exact location, but you send out a troubleman to hunt it up and clear it. It may take him an hour or a day. Meanwhile the subscriber is getting hot under the collar and saying things about telephones in general and yours in particular.

If you have a Pignolet voltmeter or volt-ammeter you can determine the approximate location and also get an idea of the nature of the trouble. With the information your troubleman can find the fault in jig time, and you will have prevented the subscriber kicking by giving him service at the earliest possible moment.

Does it pay to be informed? You ought to know.

LOUIS M. PIGNOLET, Originator of the Voltmeter Habit
78 CORTLANDT ST., N. Y.

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Don't be a "Mollycoddle" when you use your telephone. Let the "Invincible" hold the receiver for you. Automatically opens and closes switch hook. Gives you the use of both hands.

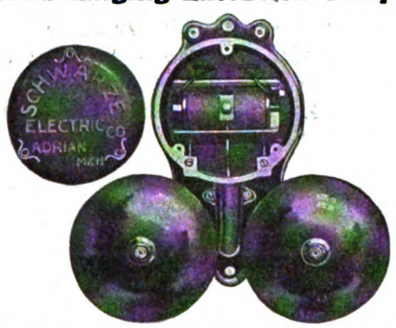
Mailed to any address in the United States and Canada. Price $1.00. *Agents wanted.* Write for terms. Manufactured only by

The Graeber-Entrikin Manufacturing Co.

Keith's Theatre Building, 1116 Chestnut St., Philadelphia, Pa., manufacturers of the "Invincible Sheet Steel Register Pay Station," Telephone Equipment, and Toll Devices. Dealers in everything electrical.

Magneto Loud Ringing Extension Telephone Bells

Gongs 6-inch to 10-inch



All Resistances — All Weather-proof

Efficiency, Durability and Price will interest you.

Schwarze Electric Co., Main Office & Factory, Adrian, Mich.

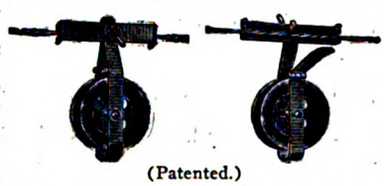
Branches { Chicago, 324 Dearborn St. St. Louis, Mo., 708 Victoria Bldg. Pittsburg, Renshaw Bldg. San Francisco, 903 Atlas Bldg.

Why Should You Buy Security Conduit Rods?

Because they're the only successful coupling made; because they join instantly and easily; because they're cheap and save cost for repairs; because they're better designed; because they're lighter than any other; because they're not negotiable at junk yards and because they never jam or stick at the wrong moment.

Why Should You Buy Security Cable Trolleys?

Because they're the **only** kind made that will take **any** size cable without jamming on the cable; because they last forever; because they're impervious; because they never break, crack, split or slip; and because they're cheap. Will you write today for further facts and prices? Mention the Security Book.



(Patented.)

THE F. BISSELL COMPANY

TOLEDO, O., 226-230 HURON STREET

TOLEDO, OHIO · THE F. BISSELL COMPANY

"It might interest you

to know that the total maintenance expense of parts for our entire plant of 3,000 switches for the past eighteen months has been $10.24," writes Supt. J. A. Duncan, of the Sioux City Telephone Company, Sioux City, Iowa. (This company operates our AUTOMATIC TELEPHONE SYSTEM.)

"A like sum

would perhaps take care of the repair cost on operators' chairs in a manual exchange of the same size," adds Mr. Duncan. (We'll be glad to send you a copy of his letter if you'd like to see it.)

It occurs to us

that the one item of switchboard cords alone for a manual exchange of 3,000 lines would amount to at least $150 in eighteen months. That is fifteen times the cost of all repair parts on the Sioux City automatic exchange.

That is only one

of the many economies of the AUTOMATIC SYSTEM. These economies all help to swell the profits. And—the AUTOMATIC, being the best service, commands the highest rates. Low production cost plus high selling price equals big dividends. That is what led to the adoption of the AUTOMATIC TELEPHONE SYSTEM in the following cities:

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Akron, Ohio.
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AUTOMATIC ELECTRIC COMPANY

VAN BUREN AND MORGAN STS. **CHICAGO, U. S. A.**

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A NEW KIND OF A PAY STATION THAT IS FOOL PROOF

NO TAPES, FLIPPERS, CLOCK MECHANISM, CHUTES TO BLOCK

NO CROSS CONNECTING PLATES, SCREWS, BOLTS, Etc, BONDED INSPECTOR, GRAVITY PRINCIPLE USED

NO TROUBLE, AFTER COST, DISHONEST COLLECTIONS, ARGUMENTS

"INVINCIBLE" SHEET STEEL CASH REGISTER PAY STATION

POINTS OF MERIT

POSITIVE CONCEALED REGISTER. Shows at a glance in dollars and cents up to $10,000.00 total amount.

SELF CLEARING COIN HOLDERS Saves thousands of dollars annually by eliminating paper wads, tin tags, etc.

COIN REJECTOR IN FRONT OF STATION.

NEW LOCK OUT DEVICE. Impossible to pull lever unless receiver is off hook.

NOISELESS LOUD CODE SIGNALS.

SHEET STEEL CONSTRUCTION.

The Perfect Pay Station

"The Invincible" Standard No. 50.

POINTS OF MERIT

RECEIVER AND TRANSMITTER CONNECTIONS incorporated in Pay Station. Quick access by unlocking door. A Telephone and Pay Station in one.

IMPROVED SLOT LOCKING DEVICE. Only one coin at a time can be inserted.

MECHANISM INTERCHANGEABLE and lifts out of case complete.

NEW LEVER DEVICE.

LARGE COIN CAPACITY. Width, $4\frac{3}{4}$"; depth, 5"; height, $3\frac{1}{2}$".

SEPARATE MONEY COMPARTMENT with combination lock; 2500 changes.

"The Invincible" Is Fool Proof

The above results are obtained in an entirely NEW and SIMPLE MANNER and the PRICE is NOT PROHIBITIVE. WRITE TO-DAY for prices and catalogue giving FULL DETAILS about "The Invincible."

GRAEBER-ENTRIKIN MANUFACTURING CO. (Inc.), Philadelphia, Pa., U. S. A. (Capital Paid in $150,000.00.)

Manufacturers of "The Invincible Cash Register Pay Station," telephone equipment and toll devices. Philadelphia Offices—Suite 501-502 Keith's Theatre Building, No. 1116 Chestnut Street.

ESTIMATES FOR ENTIRE TELEPHONE EQUIPMENTS FURNISHED UPON APPLICATION.

Checking Toll Tickets Unnecessary

The "tying up" of toll lines by operators for the purpose of checking the time on toll tickets results in large losses to the telephone company, in the course of a year.

THE CALCULAGRAPH

entirely eliminates this opportunity for loss, as by its use tickets are necessary only on "outgoing" calls, and on these tickets the time of call is registered, as is also the duration of the message, which is AUTOMATICALLY computed.

IT MAKES NO CLERICAL ERRORS

Get our "Reason Why" Booklets **Write to-day**

CALCULAGRAPH COMPANY

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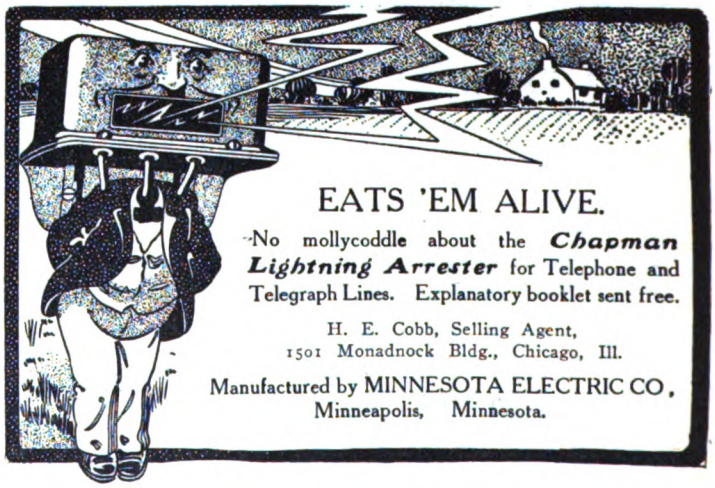

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Experiments With Concrete Poles*

By G. A. Cellar.

PROBLEMS confronting those who first undertook the manufacture of concrete poles without any precedent to guide them included the following:

(1) Shall the poles be made of such dimensions as to necessitate a concrete foundation, or of such size and shape that they will be securely held in ordinary earth by thorough tamping?

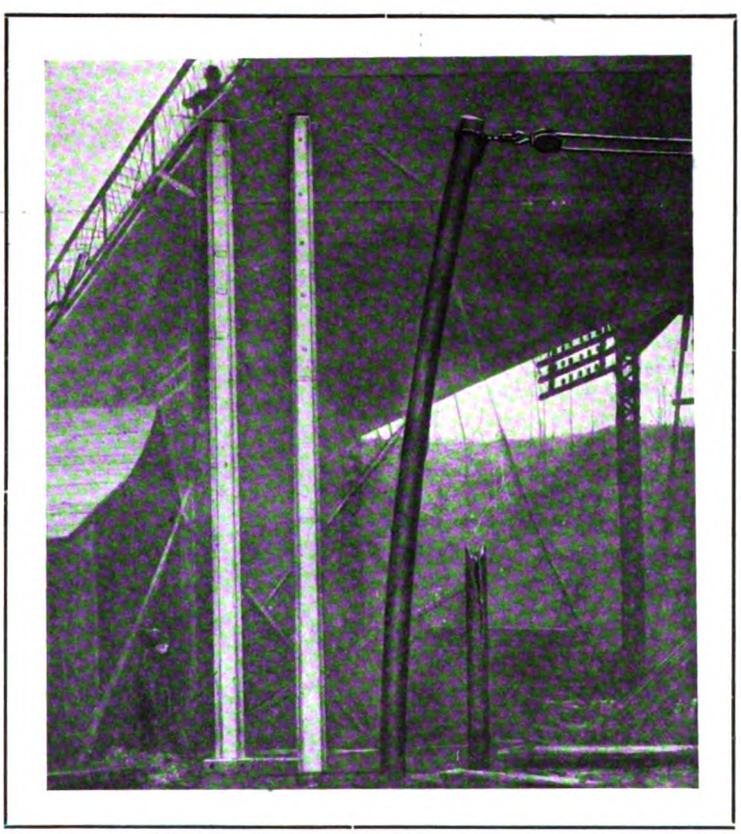
(2) Shall they be made in a yard and then distributed, or shall the material be transported to the various locations in which the poles are to stand and the poles be made there?

The experience of late years on all lines of railroad is that the expansion of track and other improvements have made it necessary to move to new right-of-way lines so many telegraph poles that, in planning for a pole of infinite life, it would be better, if possible, to procure a type which would be secure without the foundation which would render its location when once set up a permanent fixture, and this type would be preferable to the fixed type;

(a) Because of its smaller cost to construct;

(b) Because of its smaller cost to set up in the line, and

(c) Because it will be easily removable to a new location.



Test (No. 2) of Wooden Pole. Photograph No. 1, Showing Curvature When Top Deflection Was 56 Inches.

The second question was decided in favor of the manufacture of poles in yards, because their construction at the points at which they are to be set involves the transportation to these points of not only the solid materials to be used in their manufacture, and shelter for these materials, but also the water, which is not ordinarily available, and the forms. In fact, a very considerable additional physical property in the crude materials proportionate to the smaller sum total of the finished product.

On busy railroads construction at the point of setting would involve the assembling of the apparatus on a car, the use of motive power and the obstruction of the main track to a certain degree. This being the case, the alternate plan does not require any more apparatus or crew, will not require the services of a locomotive and crew as long or for any longer time than the plan of making the poles at the place where they are to be set up; but it involves in addition, perhaps, the use of a derrick to be mounted on a car, the beam of which shall have sufficient radius to reach the line on which the poles are to be set. The procedure to be followed would then preferably be to manufacture the poles in a yard and have them thoroughly seasoned there before moving. In preparing for distribution, they should each be tagged or otherwise have a designation or location attached to each one, indicating the exact site in which the surveyor or inspector has designated each to be set on account of the necessities for grading the line. The poles should then be loaded by the use of the yard derrick or a derrick car, be taken out by a train, and by the crew of the derrick set up in their permanent places in the line, in holes previously dug for their reception. This plan will require very little if any more obstruction of the main track than the stoppages requisite for the unloading of seasoned cedar poles.

In the working out of the plans for the requisite strength with the minimum of weight, the two hollow poles referred to in detail hereafter were made. The results of the tests are given in this paper, as an example of progress and are not to be taken as the best form for adoption but quite the contrary. One of the patterns was square in section, with the corners chamfered off; the other, octagonal in section, and the hollow space extending from the base for about two-thirds of the length of the pole, the upper third being solid, and the walls of the lower two-thirds being from 1¾ ins. to 3 ins. thick. These poles weighed approximately thirty-five hundred pounds, and were calculated to withstand any stress in any direction that could possibly be imposed upon them by a line of fifty wires, each wire coated with sufficient ice to make it one inch in diameter. The test was made in connection with two carefully-selected cedar poles of the same length (30 feet), and all were set in concrete, the bases being 3 ft. x 3 ft. x 5 ft. deep.

*Continued from the issue of June 22.

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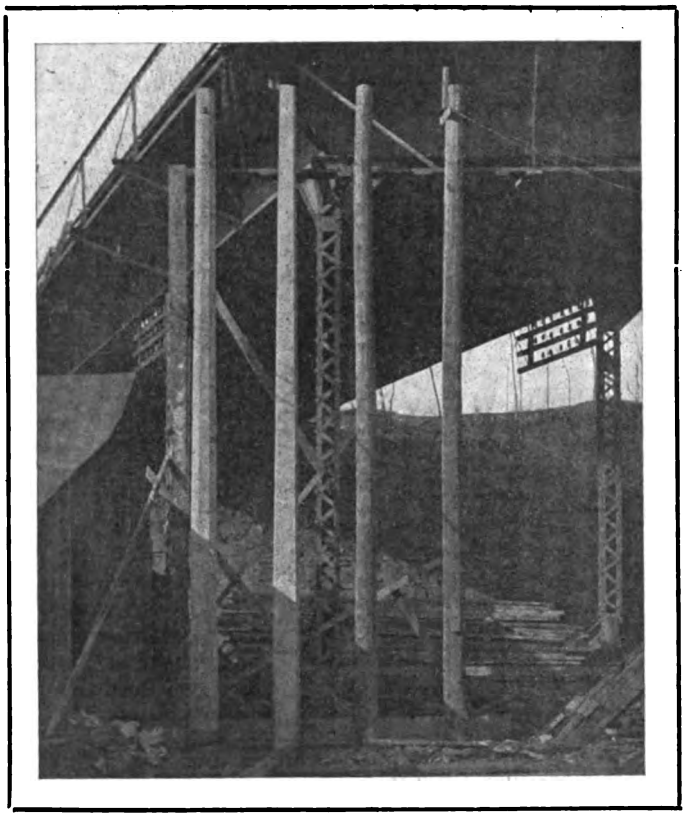
Just within the outer surface the walls of the concrete poles were reinforced with iron rods, which consisted of four ¾ ins. round bars ,each twenty-four feet long and four ⅝ ins. round bars of the same length. The poles were eight inches in diameter



Concrete and Wooden Poles, Set Up Ready for Tests.

at the top and thirteen inches at the base, having a taper of one inch to each five feet. Galvanized iron steps were screwed into wooden blocks moulded into the concrete, and holes were left for through bolts for supporting the cross-arms. The cross-arm braces were attached to the arms by through bolts in the same manner and fastened to the poles with ordinary lag bolts driven into wooden plugs, which were placed in the concrete at the proper places. The concrete poles were set to a depth of five feet in concrete with the two white cedar poles of practically the same dimensions, and, after standing long enough to permit the cement to become solid, they were tested in turn in the following manner:

An iron clevice was placed around the pole to be tested ten inches from the top, to which a wire rope was attached, leading over a pulley placed at the same height and at an equal distance from the pole so as to form a right-angle, and fastened to a differential pulley-block, which was attached to a laboratory weighing machine.

The results are fully shown in following tables, and in the accompanying diagrams and illustrations made from photographs.

Length. 30 ft. Deflection at Top.	Base Diameter. 14 in. Load Pounds.	Top Diameter. 8 in.	Depth in Concrete Anchorage. 5 ft.	Distance from Point of Fulcrum to Point of Load. 24 ft. 2 in. Time.
20 in.	1,830			11:50
22¼ in.	2,230			11:51
29 in.	2,630			11:52
35 in.	2,870	First crack		11:53
36½ in.	2,950			11:54
38¼ in.	3,030			11:55
50 in.	3,370			11:56
56 in.	3,430			11:57
66 in.	3,494	Pole broke		12:00

Results of Test on Pole No. 4, White Cedar.

After the cement poles had been broken the reinforcement so held them that it required almost the breaking pressure to further deflect them from their slightly inclined position. The wooden poles, under strain, presented the form of an arch before breaking, and when they gave way were fractured completely; but these features were lacking in the cement poles, which were very firm and did not give until they began to crush at the ground line.

The mixture used in these cement poles was 1-3.They were constructed in cold weather, and, through some mischance, at the last moment we were unable to get suitable gravel. Pole No. 1 was found to have a defect in the casting, which is believed to be the cause of its early rupture. Pole No. 2 gave a very much better result.

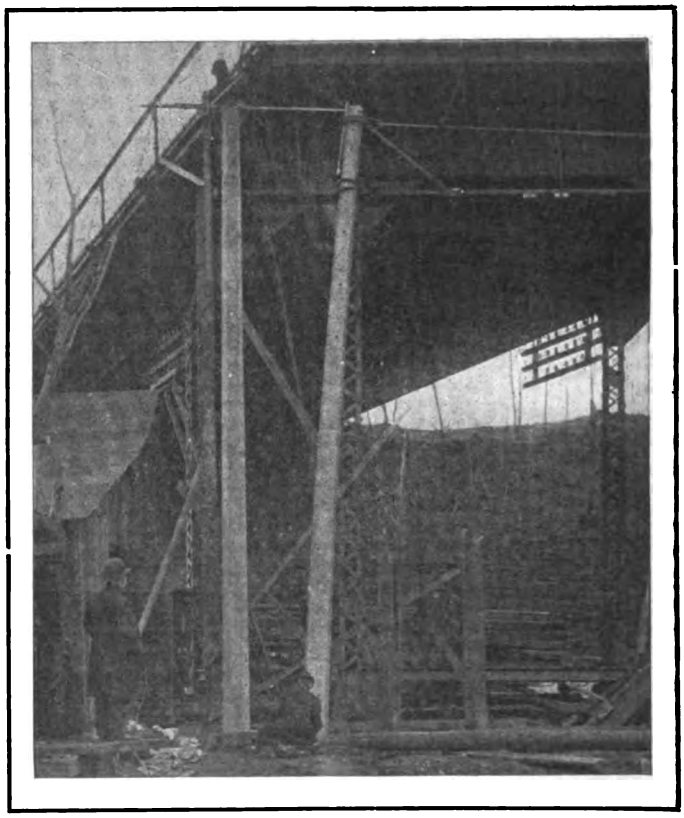
Length. 30 ft. Deflection at Top.	Base Diameter. 14 in. Load Pounds.	Top Diameter. 8 in.	Depth in Concrete Anchorage. 5 ft.	Distance from Point of Fulcrum to Point of Load. 24 ft. 2 in. Time.
14 in.	172			....
37 in.	2,230			....
47 in.	2,530	Pole broke		11:03

Result of Test on Pole No. 3, White Cedar.

The consensus of opinion seems to be that a 1-2-4 mixture is the best for use in this class of construction, and, while the experiments related above were entirely satisfactory in the development of the problem, the hollow pattern is not considered to be the highest type desirable; that is, to combine sufficient strength with the least possible weight, in order to obtain ease in handling, and that the removal from place to place may be readily feasible.

To fulfill these requirements the pole should be made with a superstructure of somewhat greater strength than the wires which it is required to support, joined to sufficiently added strength by reinforcement and added area in the base, especially at the ground line; and the base should be reinforced in the most effective way to withstand the extreme pressure at the point of fulcrum.

These conditions are all capable of mathematical computa-



Square Concrete Pole, Showing Appearance Just Before Crack No. 1, Test No. 3.

tion, and if fulfilled will give a product comparatively easy of manufacture, of reasonable cost, of greater tensile strength than the poles now in use and extremely high durability.

The argument has been advanced that the reinforced cement

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pole would be very liable to damage or disruption by shock, but the fact that concrete piles, both of hollow and solid designs, are driven by pile drivers, and especially with the knowledge of the experiments at Rochester, which showed that the poles, even after they had been fractured at the surface of the foundations, required an extremely heavy pressure to produce further deflection from the positions at the time of fractures—in other words, that they were almost as stiff as when they stood upright, and continued to be so throughout the entire test—I feel that any

Length.	Base Diameter.	Top Diameter.	Depth in Concrete Anchorage.	Distance from Point of Fulcrum to Point of Load.
30 ft.	13 in.	7 in.	5 ft.	24 ft. 2 in.

TEST NO. 1.

Deflection at Top.	Load Pounds.	Deflection 12 inches above Ground Line.	Time.
¾ in.	50	....	2:02
2½ in.	1,830	....	2:04
3½ in.	2,230	....	2:08

TEST NO. 2.

¾ in.	50	Temporary deflection	1 in.	....
4 9/16 in.	2,630	....	....	2:10
8½ in.	3,030	....	1/16 in.	2:11

TEST NO. 3.

3½ in.	50	....	....	....
31 in.	3,290	....	....	....
34½ in.	3,430	Crack No. 1	⅛ in.	2:14

TEST NO. 4.

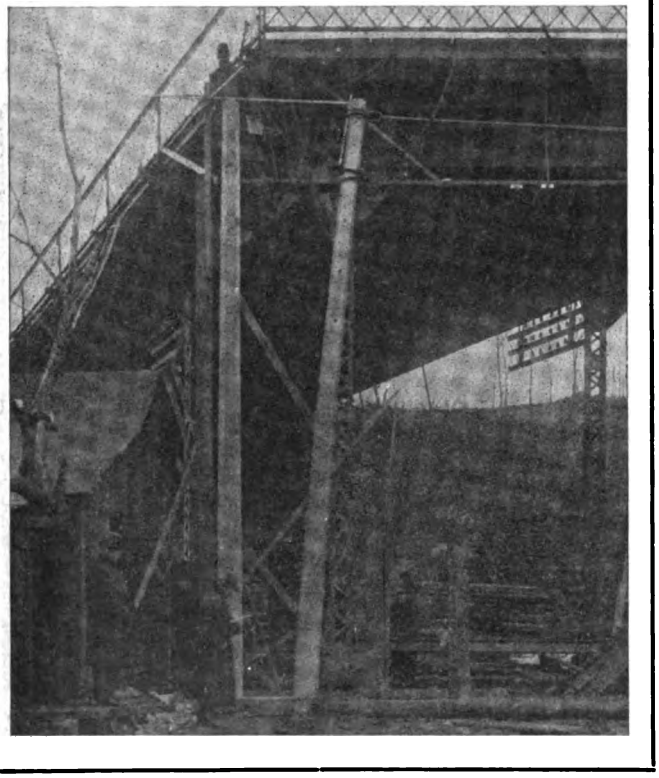
21¼ in.	50	Temporary deflection	22 in.	....
39 in.	3,690	Crack No. 2, 3 and 4, Pole crushed ground level.		crack at

Results of Four Tests on Pole No. 2, Concrete, Square.

alarm at the prospect of damage by collision between the pole and anything else than a movable object that would destroy any pole of natural or manufactured composition is unfounded.

As to the insulating qualities of the concrete pole, it is hardly necessary to mention that they are superior to those demonstrated in any other pole manufactured in this country.

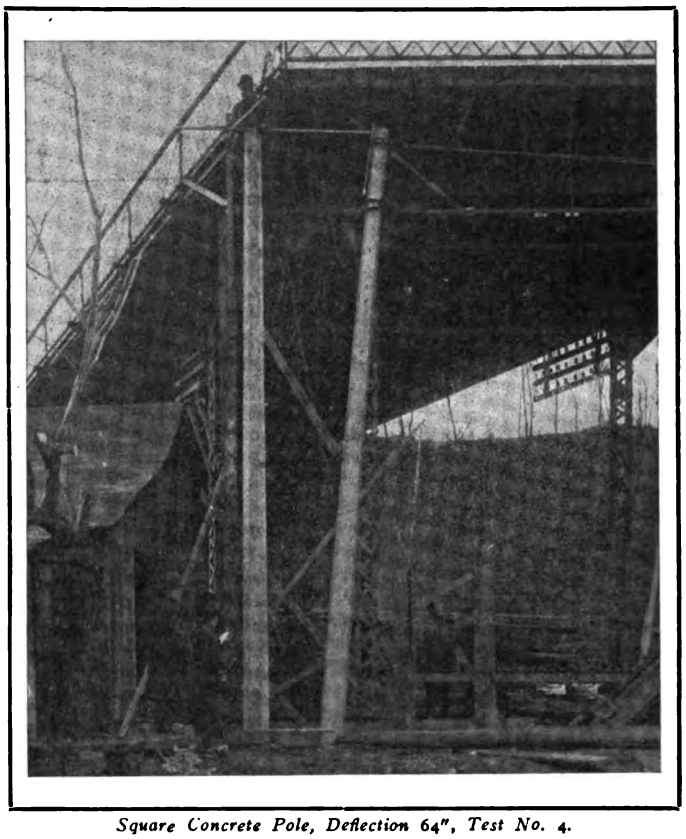
The writer has collected the following references to work done by others on concrete poles, which may be interesting to



Appearance of Square Concrete Pole, When Deflection was 22", During Test No. 4.

those who wish to trace the progress of this line of experimenting.

The "Geological Survey of Ohio," fourth series, Bulletin 2 (1904), entitled "Uses of Hydraulic Cement," by Prof. Frank Harvey Eno, of the Ohio State University, presents in an article entitled "Cement Telegraph Poles" an item of some interest, describing cement butts for wood poles that have rotted off, observing that when a pole has to replaced often only the part set-



Square Concrete Pole, Deflection 64", Test No. 4.

ting in the ground has deteriorated, and while in some country districts the pole may be cut off and reset there are many poles that must be replaced altogether, thus losing the most of the pole. To meet this contingency a cement base has been devised, octagonal in shape, with four iron strips bolted to opposite faces, extending a foot or more above the concrete. In installing this concrete base the rotten pole is sawed off, the lower end swung a little to one side, the cement base put in the place of the rotten stump and the pole is then swung into the socket formed by the iron strips and securely bolted. The pole when thus equipped is alleged to be better than new. In restumping in the manner just outlined no wiring need be touched nor telegraph communication interfered with in the least. Another feature of the use of these cement butts is that when a pole has deteriorated beyond the point of usefulness and has to be replaced a pole five feet shorter can be furnished, thus materially reducing the cost. The above mentioned article states that these butts had been in use for three years and were giving good satisfaction. The practice of restumping is largely followed in the present day, except that stumps of wood are used instead of those of concrete.

The *Cement and Engineering News* for August, 1902, mentions with strong approval the cement butts manufactured at Battle Creek, Mich., giving about the same points stated above and estimating that a saving of from 35 to 55 per cent is realized by the use of these butts in reconstruction.

Mr. Robert A. Cummings, member A. S. C. E., a consulting and constructing engineer, with offices in Pittsburg, Pa., made, in 1903, some experimental concrete telegraph poles at Hampton, Va., and found them to be quite satisfactory for ordinary purposes. The cross-section was that of an equilateral triangle with 12-inch sides at the bottom of the pole and six-inch sides at the top. The poles were thirty feet long and were reinforced with three-fourths inch vertical rods at the corners. They were stiff enough to support their own weight, a span of about twenty feet. At that time Mr. Cummings had not seen any concrete

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poles in actual use, but said he had designed some large distributing poles for the New York Telephone Company.

Mr. McDonald, chief engineer of the Nashville, Chattanooga & St. Louis Railroad Company, wrote under date of January 22, 1906, that he had used concrete poles five inches square at the top and eight inches at the bottom, thirty feet long, for supporting warning straps, or ticklers, and that they have given such satisfaction that he has adopted them as standard for that purpose. The most satisfactory results were derived from these poles by attaching pipe cross-arms and no deflection at the middle ordinate of the pole was discernible.

The United Electric Railways Company of Baltimore has used cement trolley poles with good results.

Mr. Alexander Crawford Chenoweth, of Brooklyn, made in 1906 some cement poles sixty feet long and fourteen inches in diameter, calculated to withstand a direct pull of eight tons and a torsion from a yard-arm four feet long equal to four tons. These poles, erected in place, cost $2.50 a foot. They were built to carry a four-inch cable, high power, direct current transmission, the spans being five hundred feet.

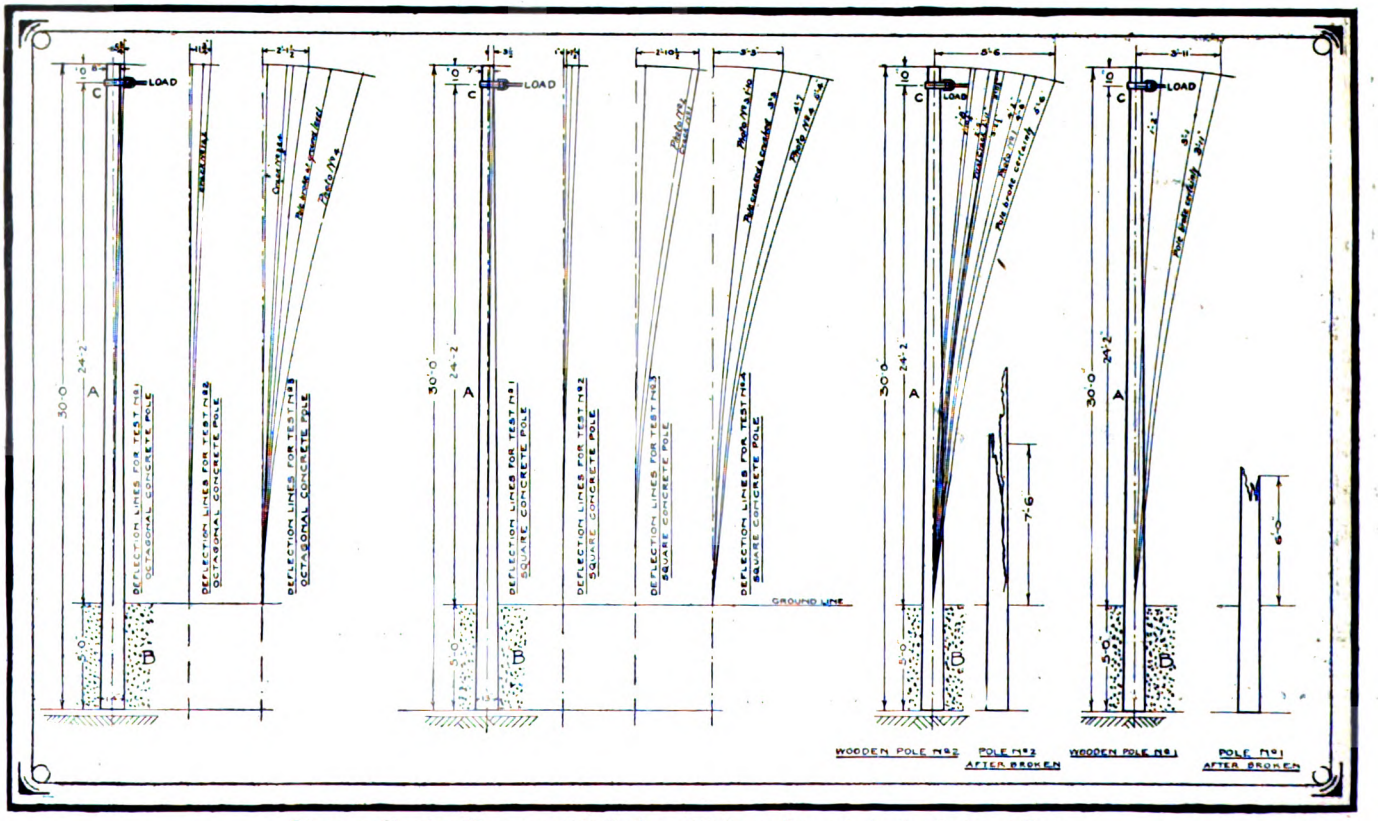
Mr. J. B. McKim, superintendent of the Western Division of the Pennsylvania lines west of Pittsburg, made and set up last year in the line along the Pittsburg, Fort Wayne & Chicago Railway, near Naples, Ind., fifty-three concrete poles of very graceful proportions, in which the method of reinforcement used differs essentially from any other of the poles referred to herein. These poles are small in section and approach the minimum in weight. They have thus far given entire satisfaction and show no evidence of decay.

A notable example of recent construction of a pole of mammoth proportions is that of the reinforced concrete tower for the West Penn Railway Company's transmission line, spanning the

Length. 30 ft.	Base Diameter. 14 in.	Top Diameter. 8 in.	Depth in Concrete Anchorage. 5 ft.	Distance from Point of Fulcrum to Point of Load. 24 ft. 2 in.
		TEST NO. 1.		
Deflection at Top.	Load Pounds.		Deflection 12 inches above Ground Line.	Time.
3¾ in.	1,830	.....	1/32 in.	3:17
5¾ in.	2,230	.....	1/16 in.	3:18
		TEST NO. 2.		
½ in.	 50	Temporary deflection, ½ in...	1/32 in.	....
8 in.	2,630	.....	⅛ in.	3:19
11¾ in.	3,030	Crack No. 1 and 2.....	3/16 in.	3:20
		TEST NO. 3.		
1¼ in.	 50	Temporary deflection	1/16 in.	....
14¼ in.	3,430	Crack No. 3 and 4.....	¼ in.	3:24
18 in.	3,210	Crack No. 5 and crushed bolt	⅜ in.	3:25
25½ in.	3,150	Pole broke at ground level..	¾ in.	3:26

Table Showing Results of Three Tests on Pole No. 1, Concrete, Octagonal.

Octagonal Pole, Test No. 3, After Rupture.



Diagrams Showing Character of Deflection of Poles at Intervals in the Series of Tests.

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Monongahela River at Brownsville, Pa. This structure, which is 150 feet in height, supports cables through a span of 1,014 feet, crossing the Monongahela River. The cables are attached at an average height of 105 feet from the base of the pole, which is backed up by a shorter structure of the same construction, used as an anchorage tower. Both towers were designed as cantilever beams and are mentioned as examples of how these erections are extending. The details of construction are outlined by Mr. F. W. Scheidenhelm, who designed and constructed the towers, in an article published in the issue for May 2, 1907, of the *Engineering News*.

After a somewhat extensive series of experiments made some time since Mr. J. L. Weller, member of the Canadian Society of Civil Engineers and superintending engineer of the Welland Canal, built and erected a power line along the Welland Canal, using reinforced concrete for the manufacture of the poles. The poles in this line stand from 45 to 70 feet in height and were designed to withstand a horizontal pull at the top equivalent to 2,000 pounds. These poles have been standing in the line for more than three years and are apparently in good condition. I am informed that Mr. Weller also built a line of concrete poles 40 to 60 feet in height for the Niagara Falls Power Company and a line twelve miles long from DeCow Falls to Welland for the Hamilton Cataract Light, Power and Traction Company, the poles running from 30 to 40 feet in height above the ground. Short, heavy stubs are used to carry the line over the gorge at DeCow Falls and poles 68 feet high carry the span of 400 feet crossing the Welland River.

The poles themselves in the latter case are erected in the centre of square concrete piers on pile foundations and are capable of standing an immense strain. He also made a pair of concrete poles 150 feet in height for the Lincoln Electric Light and Power Company to carry that company's wires over the old Welland Canal at Lock Three, St. Catherines, Ont. These poles are 11 inches square at the top, 31 inches square at the base and weigh about 45 tons each. They were made, not built up, from the base like the towers at Brownsville, Pa., above referred to, but horizontally on the ground and, as is the practice with wooden poles, raised into position. Of course, their extreme height and weight made it necessary to use special apparatus for their erection. Mr. Weller's processes of reinforcement are covered by patents.

Recurring briefly to the relative merits of the reinforced concrete poles as compared with the woden pole restumped with concrete above referred to, it is thought that, while quite a considerable output of the latter have been manufactured and used, unless some more secure arrangement for uniting the two parts in the restumping process shall be adopted, and one that can be secured at a low cost, this solution of the problem of supplying a substitute for the wooden pole will not be a lasting success. Another point that may be cited as against the use of the stumped pole is that the greatly increased cost, by reason of putting on a sufficiently stable brace, will not be justified by the short additional life secured for an old pole by the restumping process.

It is expected that within a few weeks some steel poles with just enough concrete to serve as a preservative, and other steel poles covered experimentally with a cement paint, will be set in the line along the Fort Wayne Road. Experiments have also been made with several sizes of reinforced concrete cross-arms with very satisfactory results.

The tests at Rochester, Pa., were made by Mr. Robert A. Cummings, who built the poles for the Pennsylvania Railway in his yards at that point.

Managing a Telephone Company's Supply Department*

By M. R. Tracy, Storekeeper for the Toledo Home Telephone Company, Toledo, O.

THE trial balance is probably the greatest nightmare producer in the storekeeper's list of troubles, and the one most frequently neglected; but without it he merely stumbles along and never knows "where he is at." He starts from some place, generally the inventory, and wanders around in the marsh of Indefiniteness and is finally lost in the bog of Nowhere.

Some storekeepers (and the bookkeepers as well) make a fatal mistake in trying to reach a balance by balancing each card and then the difference between the total debits and total credits on the cards should be the balance in the General Books. For example, assume that the cross arm card shows something like the following items:

Received 750 @ $.24, $180.00. Issued 200 @ $.24, $48.00. Balance, $132.00.

The muslin card shows:

Received 580 yards, $.06, $34.80. Issued 200 yards, $.06, $12.00, Balance, $22.80.

This, if correct and the General Books are correct, will give the true balance; but if there should be a difference, how may one find it?

Someone asked more than twenty-three hundred years ago, "How can two walk together except they be agreed?" and this question has waited in vain these twenty-three centuries for an answer.

To "walk together" they must keep in step and the storekeeper *may* be in step with the bookkeeper in regard to his cross arm account and your muslin account. The question to be settled is whether he is so, and can he prove it? If he can, how is he going about the job?

Having gone through every voucher in which the auditor has charged or credited the warehouse with anything, and having entered credits from invoice journal as well as credit memos., a start can be made on the trial balance. Starting with debits the account will show:

DEBITS.		
Balance, May 1st, 1906	$36,845.96	
Received from Construction	986.45	
Received from Maintenance	86.40	
Purchases as per vouchers	6,864.68	
Journal vouchers (list each voucher separately)	44.86	
Total Debits		$44,828.35
CREDITS.		
Issued to Construction	$6,875.64	
Issued to Maintenance	867.85	
Issued to General Expense	36.84	
Sales as per invoice journal	324.86	
Credit Memos	36.94	
Journal vouchers (list each voucher separately)	19.79	
Total Credits		$8,164.92
Balance May 31st, 1906		$36,666.43

The items received from construction include telephones discontinued and returned to the warehouse, or any other material that has been construction material and has been discontinued.

"Received From Maintenance" would include receivers and transmitters that were once defective, but which have been repaired.

Of course these are only samples of material which might be received from Construction or from Maintenance.

A better plan is one that the writer likes to call the step by step method. Beginning with Warehouse Debits, one takes the voucher of Hard & Ware, showing all the material from this firm has been charged to the Warehouse account. Cross arm

*Concluded, from issues of June 1, 15, 22.

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braces are posted to the card for braces, lag bolts to the lag bolt card, nails to nail card, and so on through *this* voucher.

Now the total of the debits on these cards is taken before returning them to the case. If this total agrees with the debit entry on the voucher the storekeeper knows that he and the bookkeeper are "walking together." They are in step. They "agree."

If it is found that there is a difference it is known that it must be between *this* voucher and the cards and can be located easily.

When this "step" is taken, and the balance agrees with the voucher, then the cards are returned to their alphabetisal place in the case and the next voucher taken.

When all the material vouchers have been entered and the Journal Vouchers, one can commence on the warehouse credits. These are made up mostly from the Monthly Reports, but must include also the Warehouse credits from the Invoice Journal and Journal Vouchers.

"Construction" in the monthly report is taken up and the cross arms entered on the credit side of the cross arm card, brackets on the bracket card, paraffine on paraffine card and so on through the whole construction part of the report.

Now before returning any of these cards to the card case, it is necessary to get their total. If this agrees with the total of Construction as shown in the report the storekeeper knows he is "in step" thus far. Now one can return the cards to their alphabetical place and begin on Maintenance. He can do the same with General Expense and so on through the entire report; the one essential thing is for the storekeeper to be sure that he and the bookkeeper "agree" at every "step."

The Toll Line Clearing House*

By J. M. Plaister.

In many sections of the country the Independent long distance lines are made up of sections owned and controlled by widely different individuals or companies, and we find it no unusual thing for as many as five or six companies to participate in the handling of one single message. With companies so situated, the question, "What shall be done with the receipts for the messages?" acquires much importance. The only satisfactory agency for handling them yet developed seems to be "The Toll Line Clearing House," or, in other words, "A Co-operative Auditor," which derives its support from the companies which operate the lines.

The organization of several of these Clearing Houses, in as many states of the middle west, has resulted in an immediate and invaluable improvement along several lines. Notably standardization of clerical methods and equitable distribution of earnings have advanced; but with these successes has come a keen appreciation of the many difficulties attendant upon the just, equitable and economical accomplishment of this great task.

Probably the one great question that first presents itself to those originating a clearing house is: "Upon what basis shall the joint earnings of interchanged business be divided?" Basing its judgment upon the experience of one of its brother organizations, the Iowa Independent Telephone Clearing House decided that the most equitable, and at the same time the most economical plan, would be to ascertain the total revenue accruing from all messages sent from one company's stations for one month, the total mileage traveled by these messages, and by dividing the revenue by the mileage, to establish an average message mile rate for that company for that month's business. The originating commission being first deducted, the message mile rate, ascertained as above, was then used in apportioning the earnings to the various lines, during which apportionment each interested company's mileage was measured on an air line between junction points.

Before the management had been using this method very long discrepancies began to appear that were very hard to locate. Diligent search, however, revealed an average inaccuracy of from one-half to one and a half per cent, due to the fact that an average message mile rate, instead of an exact one, was being used. This search also revealed that the inaccuracy, though small, always fell in the same place, instead of being equally distributed among all of the clearing companies. Furthermore, it seemed unjust to clear a message that traveled in one direction on a different basis than a message traveling in an opposite direction over exactly the same circuit, which condition was brought about by the originating company's message mile rate in each case governing the transaction.

After 18 months experimenting with this method, the Iowa Independent Telephone Clearing House is about to abandon it in favor of one which, while more expensive at the outset, will, it is believed, be ultimately cheaper, and will, beyond doubt, be at all times absolutely correct.

The managers have begun the preparation of an alphabetically arranged card system in which each card indicates the percentage due each participating company for any one message or group of messages. In determining the percentage, originating commissions, mileage earnings and terminating charges, if any, are all taken into consideration. This, while a huge task, as in Iowa alone there will be something over 4,000 cards, reduces the prorating work to a minimum, and will at once reduce the cost of the entire Clearing House operation.

If there are two possible routes for the same message, both will be shown upon the same card, as will also be shown the distribution under the night rate where it is used.

The second prime difficulty presented itself when the question of prorating the earnings from messages paid for in coupons, which are almost universally sold at a standard discount, came up. Under the message mile rate plan the coupon discount merely reduced the message mile rate by a small fraction, and thus spread the loss evenly over all clearing companies, whether they actually took part in handling that class of messages or not.

The Iowa Clearing House will in the future endeavor to designate messages of this kind, so that the discount may be deducted where it belongs; but this is very difficult of accomplishment, and but a partial remedy at the best. The advisability of gradually adjusting this matter, with the ultimate idea of entirely discontinuing the sale of coupons at a discount, should be considered by all managers.

The third and last of the problems which the writer will consider in this paper, is that of the foreign company which participates in handling long distance business. For this there are two clear and defined remedies. The first and best—secure their affiliations and support. The second—hold all clearing companies responsible for business turned onto a clearing house line, being careful, however, to give them due credit for all balances due the foreign connecting companies.

What the Iowans believe to be one of the strongest if not the very strongest point in their method of accounting is the use of numbered tickets for recording messages. This immediately lifts each message from among its fellows, and stamps it with an individuality, which is of great value. If operators are required to exchange these numbers when handling traffic the resulting accuracy and ease with which errors may be detected much more than offsets the possible slight loss of time.

*Abstract from an address at the International convention, June 5, 1907.

INTERNATIONAL INDEPENDENT TELEPHONE ASSOCIATION BULLETIN NO. 1.

In various sections of the country the Independent operators have rejected, with commendable unanimity, traffic overtures made by the opposition. The Independent spirit has dominated, everywhere, the action of individuals and State associations, and

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not one break in the ranks has been reported from the Atlantic to the Pacific since the International convention in Chicago. It will be the aim of the new officers to still further develop this feeling of unity.

New Executive Committee.

The President has, after mature deliberation, and with the approval of the Advisory Board, appointed the following Executive Committee: W. B. Woodbury, Detroit, Mich.; O. C. Snider, Kansas City, Mo.; J. B. Hoge, Cleveland, Ohio; G. N. Bandy, Des Moines, Iowa; A. C. Lindemuth, Richmond, Ind.; W. E. Doolittle, Lafayette, Ind.

Removal of Headquarters.

It has been decided to remove the headquarters of the association from Cleveland, Ohio, to Chicago, Ill., the latter city being located more centrally and also more easily reached from every section of the country. However, the headquarters will remain at Cleveland until arrangements have been completed for transferring to Chicago, due announcement of which will be made.

Mr. Charles West, secretary elect, will not take active charge, but Mr. J. A. Harney, the assistant secretary, will perform the duties of secretary for the secretary.

More Publicity.

Particular attention will be paid to spreading the gospel of Independent telephony and boosting the telephone business generally by means of newspaper and magazine publicity.

Reading Notices.

Under the management of the Publicity Department suitable write-ups on almost any subject pertaining to Independent telephony will be furnished free of charge to members for reproduction locally. Write the secretary for the information wanted. Generally the matter furnished will be so prepared that local papers will gladly publish it as a news item.

Boom the Telephone Business.

Let everybody talk up the good points in the telephone business.

Monthly Financial Statement.

Commencing with Bulletin No. 2, a monthly financial statement will be published, showing the fixed charges, state of treasury, assessments, receipts and disbursements of the association.

Managers.

LOOK FOR THE SHIELD STAMP on all telephones and switchboards purchased. It is an assurance that the manufacturer is contributing to the support of the association.

Association to Incorporate.

The association will be incorporated at an early date by the Advisory Board, with a nominal capital, and the articles of association will provide that it shall not be run for profit.

Supply Department to be Discontinued.

The association has decided to discontinue the supply department as soon as the stock of "Shield" supplies now on hand can be closed out. This stock consists of Colonial lanterns, standard toll signs, large and small transparencies, inside celluloid toll signs, cardboard toll signs for construction work, gold-plated emblems, celluloid buttons, and "Shield" electrotypes for one and two color printing. Customers who have dealt with the association in the past know that the goods handled by it have always been of the best quality, unsurpassed in design and lasting properties. The discontinuance of the Supply Department offers them an opportunity of procuring "Shield" advertising essentials at reduced prices.

Managers who have hitherto failed to give "Shield" advertising a trial can now participate, at a minimum cost, in the advantage of this mode of pushing and individualizing their business.

The association has never aimed to make money out of its "Shield" supplies. It has bought goods in large quantities and sold them at a very slight advance to the Independent operators.

Bargains in "Shield" Supplies.

In order to close out the department without unreasonable delay, it has been decided to dispose of the stock on hand, which is fresh, clean and first-class throughout, at a substantial discount from previous prices—in other words, at figures much less than the individual buyer could obtain otherwise.

As this is an opportunity that will not be open very long, managers and individuals are advised to act at once. NO NEW GOODS WILL BE PURCHASED BY THE ASSOCIATION AND ORDERS WILL BE FILLED IN ORDER OF THEIR RECEIPT. From the latter rule there will be no deviation.

Price list and further particulars about discounts may be obtained upon application to the General Office at Cleveland, Ohio.

Map Work Held in Abeyance.

The Map Department has been discontinued for the time being. This branch of the Association's work has accomplished the purpose for which it was created, but has been left in such shape that it can be revived at a moment's notice, should occasion require.

Chronicle Discontinued.

The publication of the Chronicle has been discontinued. Settlement for unexpired subscriptions will be made in due time.

1907 Convention Proceedings.

All desiring copies of the last annual convention proceedings will please write the assistant secretary at once, stating number wanted. This information is necessary in order to provide a sufficient number of copies for distribution.

We have some of the 1906 report nicely bound, which will be mailed free on application, as long as the supply lasts, on receipt of 7 cents in stamps for postage.

Honorary Members.

Since the last report has been issued to the press Mr. D. A. Walker, Columbus, Ohio, and Mr. E. L. Swaine, Los Angeles, Cal., have qualified as honorary members of the association.

COMPARATIVE DATA CONCERNING THE DEVELOPMENT AND FINANCIAL GROWTH OF THE HOME TELEPHONE COMPANY, JOPLIN, MO.

FIGURES showing the advance in respect to the number of subscribers and the income derived from the exchanges of the Home Telephone Company, Joplin, Mo., we are able to present through the courtesy of Mr. Theodore Gary, president of the company. These figures are as follows:

	June 1, 1906.	June 1, 1907.	Increase 12 months.
Number of telephones, Home Telephone Co., and its combined exchanges	4,309	5,373	1,064
Income	$92,227	$121,249.32	$29,022

Increase in Net Earnings in same time	$14,150
Increase in Interest Charge in same time	4,200
Increase in Net Gain in Stock	$ 9,950

The strong support that Independent companies in this locality have received in comparison with that accorded to the Bell company is indicated by the following table:

Number of Telephones June 1, 1907.	Home.	Bell, April, 1907, Directory.
Joplin	2,642	894
Carthage	1,384	444
Webb City	816	369
Carterville	354	111
Purcell	177	...
	5,373	1,818

Although the showing for the Independents is particularly good in all cases, it is especially to be noted that at Purcell the Independent company has 177 telephones while there are none connected to the Bell lines; so that this report shows that this particular section of the state is not only strongly in favor of the Independent interests, but that certain localities are entirely undeveloped by the Bell company.

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From the Editor's Viewpoint

ACCOUNTING FOR THE OUTSIDE MAN.

MEN located away from the headquarters of telephone companies which operate a number of exchanges are very likely to hold opinions concerning the subject of accounts exactly opposite to those current in the main office. The men outside deal directly with subscribers, who are looking for telephones so that they may have the service, or perhaps are looking for improvements in service after their instruments have been installed; but whichever thing is demanded their requests must be taken care of in a hurry. If a subscriber calls up the manager two or three times in a day from his office, and asks in more or less vigorous terms why the trouble on his residence instrument has not been cleared, it is safe to assume that the wire chief will send a man up there just as soon as he possibly can; and the same proposition holds good when a prospective subscriber wants to put in a telephone. As soon as the men and the goods are ready the work is rushed, as in fact it should be. In any event, and whatever else is neglected, the apparatus must be got into service and kept working, to stop complaints. In other words, the exchange force follows the line of least resistance and so avoids trouble.

This policy may in a certain fashion please a superintendent of construction or maintenance for a while, but there is a certain very harmful state of mind which is likely to be developed in many of the local officials under these circumstances. This is not merely the idea that doing the work is of more importance than making up the accounts, which may be true enough from an absolute sense. Rather is it what seems to amount at times to almost a settled plan to omit all proper accounting for materials used. The effect of omissions and inaccuracies in the material records made up by telephone employees is in many respects a fault more reprehensible, and in the long run one which threatens greater danger to the success of the organization, than would be the failure of a bookkeeper to turn in correct accounts for cash received from subscribers. Furthermore important sections of the business policy of every telephone company of considerable size are, or should be based on correct information derived from an analysis of records showing the distribution of different classes of material used throughout the plant. The results deduced from these analyses will be correct and accurate in a somewhat lower degree than the accuracy of the records themselves. Now, one who has watched a man in an exchange trying to frame up on Saturday night a set of accounts for material which has gone out at various times throughout the week will appreciate that the percentage of accuracy he attains is not very high.

The employee of a telephone company is always very much interested in his salary, and realizes, because it is measured in dollars and cents, that it is related to the financial policy of the company. What so many men fail to grasp is the absolute and intimate relation of all the work they do to the financial success which alone can make it possible for the company to pay good salaries. When they do this, and not only do their constructing and installing well, but also furnish such information as will enable the men dealing with figures to arrive at their proper relation to the actual value of the plant, the actual revenue produced by a given portion of it, the real rate at which it is depreciating, and whatever other information they desire, employees will have gone a long way in the preliminary work necessary for the raising of their own salaries.

THE COLLEGE GRADUATE IN EVIDENCE.

THIS is the season when representatives of the big telephone companies are looking over the colleges with a view of drafting into their service the best qualified young men who graduate. Also it is the time when the wary college man looks carefully over such opportunities as are presented to him, and considers what line of work will offer him the greatest prospects of remuneration and satisfaction in the doing, according to his qualifications. It is a fair field where both parties take many chances!

As to the qualifications of the men, however, it is pleasing to note that there have in the past year been at work certain influences which will no doubt be beneficial. Men from a number of the leading universities who accept employment with a telephone company after graduation will not enter the office or exchange with a perfect and complete ignorance of the nature and purpose of a telephone plant and the operation of its apparatus. They will know what to find in an exchange, a manhole or a cable box, and very possibly will know what it is there for, so that they will be in a fairly good position to go to work on it if called upon to do so. Really, this is what their special telephone courses at college should fit them for, and just so far as they do so, by just so much are they of immediate value in enabling the college man to get a start on the fellow who lacks this kind of training.

Full value from educational training is never obtained all at once. If the benefits of the training are quickly exhausted, a weakness in the plan of instruction is indicated. This is so well recognized by educators that they devote much time to teaching, on account of their value in improving mental discipline, certain subjects which will probably never be directly used by the students. Now, a telephone man who can see nothing more in the business than a relay, or group of wires, or a line of poles, will never get to the top of his profession. The man who can plan for the future will eventually hold the best position. If college training is going to be a direct help to men in preparing for this class of work, it ought to give them more training in studies which will help them in the handling of statistics and other classes of work, such as are constantly involved in studies of telephone development. Up to the present time the college courses are too closely confined to electrical and mechanical features of the telephone plant. The utility of the telephone courses is now well established, and those who have them in charge will no doubt devote their efforts in the future to perfecting them so that they will fit men for the most rapid development to positions of high responsibility.

SUMMER INSPECTIONS.

FOR the next two months or more exchange forces of instrument installers and troublemen, except in places which are temporarily crowded as summer resorts, will in most localities have very far from as much regular work to do as falls upon them in months when demands for new telephones are received more frequently, and weather conditions affecting the service are more severe. This gives considerable time which can be employed to good advantage in inspecting the plant, and bringing everything outside and inside up to the best possible condition. It is a good time for pulling up slack wires, looking over lines where the insulation is low, tightening connections in cable boxes and straightening out and numbering wires in them if they need it, adjusting contacts and tightening joints in subscribers' instruments, and in fact performing all such numerous and diversified operations which become necessary in spite of the utmost vigilance in supervising work on the plant. While this work is best done, if possible, as a sort of a stop-gap to keep a man usefully employed until he shall again be needed for new work, there is no reason why the different jobs should not be taken up systematically.

Probably as effective a plan as any is to divide the work into classes according to its nature, such as instruments, cable boxes, etc., and then have a competent man take up each class in turn and make inspections by districts. He can take notes and turn these over to a force of men, who may go through each district and make just such repairs as are necessary; and when they are finished the notes will still be available for a final checking inspection, which should show that the section of the plant which has been covered is in the very best condition.

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The Way of the Law

CONDUCTED BY A. H. McMILLAN.

THE NECESSITY OF FRANCHISES IN NEBRASKA MUNICIPALITIES.

Our lawyer tells us that one must have a franchise to run a telephone line through the town, also one to operate a switchboard, also one to run a drop from the terminal pole to the switchboard. He also says that a franchise is no good in a town under 5,000 population. Is this right? If one must have a franchise to operate a switchboard, how long must it be idle before the franchise is void? Any other information on this point will be acceptable. L. M., Nebraska.

THE advice of your lawyer is correct in all particulars above mentioned. The State law of Nebraska provides that a company doing business in the State or incorporated in it is given a right of way along the public roads of the State for the erection of poles and wires. Compiled Statutes, 1895, Ch. 89a, Section 14. It has been held that the words "public roads," as used in this State, do not include the streets and alleys of a municipal corporation and that, therefore, it is necessary for a telephone company to have a franchise from the municipality before it can erect its poles and stretch its wires therein. The case in which this was decided was one brought by the Nebraska Telephone Company against the Western Independent Long Distance Telephone Company (95 N. W., 18) to restrain the latter from constructing its lines in the streets of Louisville, Neb., in such a way as to interfere with the plaintiff's occupation of the streets. The defense was the alleged absence of right in the plaintiff to occupy the streets of the village. The plaintiff based its right to use the village streets not upon any grant from the village, but solely on the State law above quoted. The court held that the complainant company was using the streets without right.

You also ask how long a switchboard must be idle before the franchise authorizing its use is void. A franchise never becomes void until declared so by the authority which granted it. If the company holding the franchise neglects to operate under it for such a period of time as to indicate that it is the company's intention not to operate any more the franchise may then be declared void. This is in the absence in the franchise of any provisions to the contrary. There is no fixed time, the time varying under the circumstances of the case and depending somewhat on whether the company is making any preparation to continue operations or not.

OHIO DECISION ON HOUSE MOVERS.

We understand that there has been a recent decision of the Supreme Court in regard to telephone companies collecting for work or damage incurred by house movers.

The case cited was taken from Perry County, Ohio. If this decision has appeared in THE AMERICAN TELEPHONE JOURNAL, it has escaped my notice; however, we would like the sum and substance of the decision as we have been collecting, through the City Clerk, for the labor incurred by moving cables or drop wires in the way of houses being moved. A. J. C.

IF there has been a recent decision of the Ohio Supreme Court on the question of the rights of telephone companies and house movers it has not yet been published in reports of legal decisions. It has not appeared in THE AMERICAN TELEPHONE JOURNAL as yet and will not until officially published. As soon as it does appear mention of it will be made in our columns.

COMPANY CANNOT BE RESTRAINED FROM ACTING UNDER FRANCHISE.

IN 1884 the city of Salem, Ore., granted to the predecessor of the Pacific States Telephone Company a fifty-year franchise to erect, maintain and operate a telephone system in the city, in consideration of which the city was to use the poles and conduits free for fire alarm and police telegraphy and the company was to furnish the fire department with telephones in the engine house and city hall free of charge. In 1901 a controversy arose between the company and the city respecting certain taxes in settlement of which it was agreed that the company should pay the city $200 annually for ten years and the city should not, during such term, grant any franchise for a telephone system upon terms more favorable than those under which the plaintiff operated. In 1905 the city or council granted to one Sumner a twenty-five year franchise for a telephone system on certain terms and conditions and a few days afterward the plaintiff commenced suit against the city and Sumner to enjoin the latter from constructing and operating his proposed system on the ground that his franchise was more favorable than the one under which the plaintiff was operating and therefore in violation of its contract with the city.

The court refused the plaintiff company the relief it sought, for the reason that it had failed to prove that the franchise to Sumner was more favorable than its own. The court remarked that the two franchises differed so essentially that it was practically impossible to determine with any degree of certaintv whether one was more favorable than the other. The plaintiff was allowed to support its wires on poles within the fire district, while the defendant was compelled to put his underground. The plaintiff had to furnish the city three telephones and the defendant five. The plaintiff had to pay $200 a year for ten years and the defendant 1 per cent on gross receipts during the lifetime of the franchise except for the first year. Pacific States Tel. Co. vs. City of Salem, 89 Pac., 145.

FARMER HAS RIGHT TO CONTROL LINE BUILT BY HIM.

IN the case of the Formers' and Merchants' Telephone Company vs. John Noland, the circuit court at Coshocton, Ohio, found for the defendant, sustaining the judgment of the lower court.

The case is briefly stated as follows: Noland built one mile of the line of the Farmers' and Merchants' Telephone Company in the vicinity of Frazeysburg. Other farmers did likewise, and later S. E. Kisner, who owned one mile of the line, sold his rights to the plaintiff company, and it is alleged at the same time transferred to the purchasers the title to all the farmers' lines in that vicinity.

Noland had bought his telephone and paid for the material and labor of constructing his line and claimed to own it. The company, without his consent, attached nine telephones to Noland's mile of the line and then sent Noland a bill for $48 rental. It sued to recover this amount, and in a cross-petition Noland set up a claim for rentals for the nine telephones attached to his line. Noland won his suit.

AGREEMENT FOR OCCUPATION OF LAND BY POLES NEED NOT BE RECORDED.

THE Court of Appeals of Kentucky has held that an agreement giving the right to erect poles upon land need not be recorded in order to give it legal effect where the company is in actual occupancy of the land. The reason for this is that the visible occupation of the land constitutes due notice to any purchaser of the company's rights. This decision was made in an action brought by Dr. A. S. Denton against the Cumberland Telegraph & Telephone Company. The action was brought for an injunction to restrain the company from further use of the land, the complainant alleging that the line of poles had been erected before his purchase; that there was no record of any contract to the company of any right of way, and that at the time of his purchase he had no notice of any interest held by the company in the land. On the grounds above stated the petition was dismissed. The complainant did not allege that the company was wrongfully in possession or that it entered upon the land without right, and in the absence of such allegation the court held that the presumption is that the premises were rightfully occupied. Denton vs. Cumberland Tel. & Tel. Co., 96 S. W., 1112.

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From Here and There

ANNUAL MEETINGS OF CUYAHOGA AND UNITED STATES TELEPHONE COMPANIES AT CLEVELAND.

AT Cleveland, on June 17, the stockholders' meeting of the Cuyahoga and United States Telephone companies, postponed from last February, were held. It is announced that a special meeting of the stockholders will be called for July 27 to vote an increase in the common stock to the extent of $500,000.

Among the changes in the board of directors were the election of C. Y. McVey and Norman C. McLoud, of Cleveland, and Clarence Brown, of Toledo, to succeed Col. F. S. Dickson, of Cleveland, and J. K. Secor and Williard P. Robinson, of Toledo. The officers of the Cuyahoga company were re-elected without change. W. L. Cary, Jr., and M. C. Harvey, of Cleveland, and H. R. Ashbrook, of Toledo, were elected to the board of directors of the United States Company, succeeding H. R. Newcomb, Calvary Morris and C. A. Otis. Mr. Cary was elected secretary of the United States, succeeding James B. Hoge, who formerly held that position, he having been given the title of vice president.

FIFTH CONVENTION TO BE HELD JULY 9TH AND 10TH BY VERMONT AND NEW HAMPSHIRE INDEPENDENT TELEPHONE ASSOCIATION.

INDEPENDENT telephone men of Vermont and New Hampshire will hold their fifth convention at Hotel Low, Bradford, Vt., on July 9th and 10th, two days having been set aside for the gathering in order to give the manufacturers an opportunity to make exhibits. On the evening of Tuesday, July 9th, a banquet will be served, and each member is expected to contribute to the success and pleasure of the gathering by bringing a lady, as is the regular custom at these association meetings. Papers covering many practical features of telephone development and work, as well as interesting happenings in the local field, will be read by well known members. Any further information desired can be obtained by writing to G. W. Buzzell, secretary, at St. Johnsbury, Vt.

FIVE THOUSAND DOLLAR SUIT NETS ONE CENT DAMAGES.

AN attorney at Memphis, Tenn., had a telephone in his office, but when a client, who was under arrest, asked for his number, she was told he had no telephone. In consequence, the client, a widow, was found guilty in justice court in the absence of her legal advisor. The attorney brought suit in the United States District Court at Memphis for $5,000 damages. The jury brought in a verdict in his favor, but assessed the damages at one cent.

WOOD PRESERVATION BY CREOSOTE DISCUSSED IN A NEW BULLETIN OF UNITED STATES DEPARTMENT OF AGRICULTURE.

FOREST Service circular No. 98, issued May 9th, 1907, by Gellert Alleman, Prof. of Chemistry in Swarthmore College, gives some very interesting discussions based on investigations of the quantity and character of creosote found in certain specimens of well preserved timber. Methods of extracting the creosote from the timber and of analyzing the extracted creosote are described. Some useful conclusions are drawn from the results obtained in the investigations. A table at the close of the report summarizes the results obtained.

Interested persons can obtain copies of this bulletin free of charge by writing to The Forester, U. S. Dept. of Agriculture, Washington, D. C.

VALUABLE INSTRUCTIONS FOR OUTSIDE MEN.

CARELESSNESS on the part of installers and repair men is likely to be responsible for about one-half of the trouble which affects telephone exechanges. The *Central Union News* has recently printed a set of instructions which have been posted in the work and store room of the exchange at Anderson, Ind., as follows:

Don't carry instruments by the cords.
Don't carry them with the mouthpieces on them.
Don't tear one up to repair another.
Don't install one looking shabby—clean it up.
Don't leave cable boxes or can tops open.
Don't use pliers in can tops.
Don't wear spurs near cables.
Don't fail to solder connections.
Don't fail to report unsatisfactory conditions to your superior.

These instructions seem to fill the bill admirably, and are worthy of adoption by managers of many other exchanges.

VALIDITY OF TELEPHONE ORDERS.

AT Monroe, Michigan, the circuit court has held that a telephone order to a broker to purchase stock cannot be enforced in the state. The question arose in the case of William Mass vs. George A. Hastreiter. Hastreiter agreed, over the telephone, to purchase thirty shares of stock in the Michigan Fire & Marine Insurance Company, at seventy-one dollars a share, directing that the stock be sent to his bank in Ann Arbor. The San Francisco earthquake occurred the next day and Hastreiter refused to accept the stock. The court held the transaction void, there being no tangible evidence to show it had taken place.

LOUISVILLE ACCOUNTANT EXAMINES BOOKS OF BELL TELEPHONE COMPANY.

W. J. MUNSTER, of Cincinnati, an expert accountant, is in Nashville, Tenn., for the purpose of making an examination of the books of the Cumberland Telephone & Telegraph Company for the special telephone rate committee of Louisville, Ky. The company agreed to put its rates at a reasonable figure based upon the cost of maintenance. To get at the cost of maintenance the committee demanded the books of the company and the expert accountant was employed to examine them. The Cumberland has had a long fight with the Louisville authorities on matters of rates, privileges, service, etc., and the committee of the city council and another from the Board of Trade are now engaged in probing the case.

THE ATLANTIC TELEPHONE CO. HAS NOT BEEN GRANTED A FRANCHISE IN NEW YORK CITY.

At the last meeting of the Board of Estimate and Apportionment held June 21, the telephone franchise applications were referred to a committee consisting of the Comptroller, the Corporation Counsel and the Chief Engineer of the Board. This committee will not be able to report until after the summer vacation.

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For Telephone Plants, Telephone Apparatus and Switchboards for sale by Operating Telephone Companies only. Four cents per word for each insertion. Minimum charge $1.00. Prepaid.

FOR SALE, dirt cheap, 100 series 'phones, with Ericsson transmitters, Holtzer-Cabot generators and oak cabinets. Good as new. Address, R. Valentine, Janesville, Wis. 848

WANTED

For "Help" and "Positions Wanted" advertisements only. One cent per word for each insertion. Minimum charge 25 cents. Prepaid.

WANTED—Position with telephone company on construction or instrument work. Five years' experience, best of references. Address Box 836, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 836

WANTED—Back numbers of AMERICAN TELEPHONE JOURNAL for January, February and March, 1907. Address, stating lowest price, Box 840, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 840

WANTED—Salesman for telephone instruments and supplies for New York State, Pennsylvania or the Middle West. An exceptional opportunity for the right man. Address Box 843, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York City. 843

A SUCCESSFUL, progressive Telephone Manager having full charge of six exchanges wishes to make a change within sixty days. In replying state salary and territory. Address Box 853, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 853

WANTED---Continued

WANTED—Young men who are high school graduates and have had one or two years' experience in telephone work, or who are technical graduates, to enter our apprenticeship course in Automatic Telephony. Call or write. Automatic Electric Co., Van Buren and Morgan Sts., Chicago, Ill. 855

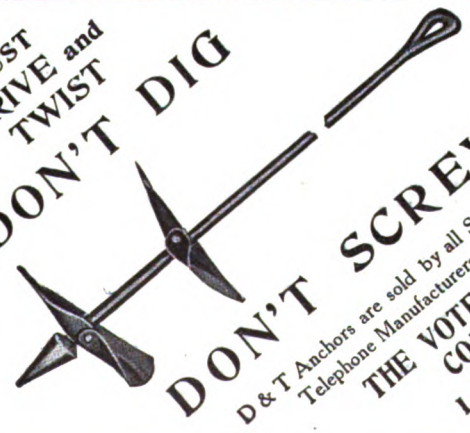
COMPETENT man wishes position as telephone auditor or accountant, capable of going ahead with office detail or installing system, latest ideas, best of references. Address, Box 856, care AMERICAN TELEPHONE JOURNAL, 100 William St., New York. 856

WANTED—Position as superintendent by a man of 26, thoroughly familiar with all branches of the telephone business; at present have charge of all the work on a Bell exchange of 3,500 subscribers. Address Box 857, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 857

WANTED—Position as manager or superintendent of telephone company, Kansas or Missouri preferred. Experienced in all lines of construction, repair and maintenance, switchboards, lines and instruments. Eight years' experience. Best of references. Address, Box 858, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 858

WANTED—Position by competent young man as manager or superintendent of telephone exchange, not over eight hundred subscribers. Six years' experience. Good habits; best reference furnished. Address, Box 859, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 859

WANTED—Experienced telephone salesman. Must be thoroughly acquainted with magneto and common battery systems. Splendid opportunity for right man. Exceptionally good territory. Address Box 860, care AMERICAN TELEPHONE JOURNAL, 100 William street, New York. 860



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Your Question—Our Answer

HOME MADE MAGNET METER.—(878.)

Frequently we have inspectors and instrument repair men bring into the office receivers in which the magnets are weakened to such an extent that they do not operate sufficiently well to give good service. It has been customary with us to test magnets of a receiver with a weight, considering a receiver whose magnets would not lift a bar of given weight as too weak for telephone service.

The writer, however, has noted in a number of cases that one pole of the receiver magnet would be practically "dead," while the other pole would be magnetized to its fullest capacity. This is a peculiar trouble, the reason for which we have not been able to determine upon, owing to our supposition having been that the two poles of a magnet were always of equal strength. However, that which we particularly desire to know is of some method of testing magnets which will give us an approximate idea as to their strength so that we may have some basis upon which to go in determining whether receivers are up to their full efficiency or not. If you can assist us in this matter, we shall be indeed grateful.

H. B. H., Washington.

In relation to the peculiar trouble which you are experiencing in your receivers we would suggest that this is in all probability due to the fact that in a number of bi-polar receivers as manufactured to-day the magnets are made of two bar magnets instead of the customary one piece of steel of the familiar "horse-shoe" shape. It sometimes occurs that one of these bar magnets is of softer steel than the other, and as they are charged together, usually by the wiping process, one bar will receive its full quota of magnetism while the other will remain practically "dead." However, as you state, this is likely to be of very infrequent occurrence.

A method of testing magnets with some degree of accuracy and one which will give you a comparative reading of magnet strengths is by the use of a magnet meter which may be constructed very cheaply and quickly in your workshop. The requisite materials for the construction of one of these instruments are: a fully charged heavy, steel magnet, such as would be used in a voltmeter, or one taken from an ordinary high grade five bar hand generator, a piece of soft iron about one inch wide and of a length equal to the width of the generator magnet, a cone shaped piece of soft iron, an indicator which may be made out of brass or copper wire, a scale of paper, a small retaining cabinet, a piece of glass, and two small coiled steel springs.

Fig. 878*a* shows the relative positions of the various apparatus mentioned, while 878*b* shows a side elevation of this entire equipment.

In using this device place one pole of the magnet to be tested against the larger end of the cone shaped piece of soft iron,

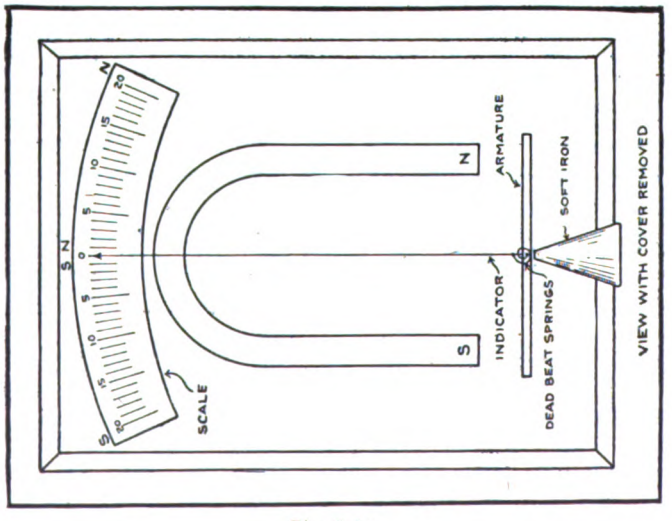

Fig. 878a.

the point of which reaches directly before the exact center of the soft iron armature. The strength of this pole of the magnet tends to neutralize the pulling effect of the like pole of the magnet in the magnet-meter so that the force of the opposite pole of the magnet exerts a greater power, and consequently moves the indicator in the opposite direction.

Of course, you will appreciate that the readings of the indicator do not indicate any particular units of power or magnetism. They are simply comparative.

The basis upon which you will test your receivers would be by testing the different poles of a receiver of which you were positive

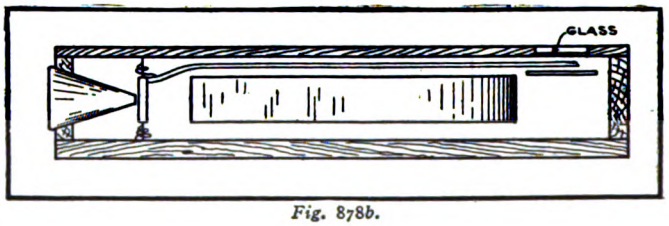

Fig. 878b.

as to the magnet strength, and note the deflection. This would then be your standard, and magnets being tested showing a smaller deflection in either direction would immediately indicate that their strength is not as great, and vice versa.

The object in using a cone shaped piece of soft iron for transmitting the magnetism to the armature is to effect as even distribution as is possible in the armature, but would not be possible were one to place the magnet to be tested directly in front of the armature itself.

It will be well in constructing this magnet meter to use two small coiled pieces of spring steel which force a tension in the opposite direction, fastened to the indicator shaft to act as a "dead beat" attachment for the indicator, so that it may immediately come to rest upon reaching the proper point of indication. This will materially assist in making quick readings.

COMMON BATTERY LINE.—(879.)

We have a line from a common battery exchange that runs through a cable about a half a mile then jumps from the cable head across the top of a large flat roofed building, bare iron wire being used, the pair of wires laid within three inches of the top of the roof. There is a truss rod to assist in supporting the roof that runs over the wires at about three inches distance, thus leaving a play of about three inches between the truss rod, the wires and the roof. The line is fastened on each side of the roof with common No. 4 knobs. After this line had been up for about ten days there were complaints of a ground on the line about nine o'clock at night. We have sent our trouble man out about eight o'clock next morning in each case of complaint but before arriving at the subscriber's station the ground would be cleared. The trouble man would generally get as far as the cable pole and make a test and it would test beyond the cable. There are iron sewer pipes ventilating from the cellar of this building up through the roof, and on dark, cold days the line stays grounded. Can you give us any suggestions that will help us in locating this ground and just why it should act in the above manner? We have a C. B. system.

W. H. K.

Your trouble is due to the contraction and expansion of the line wire coincident with the rise and fall of the temperature. As you do not give the length or size of the wire in the line under discussion we assume from the data given it to be of number twelve and of a span one hundred and fifty feet, having a stress of one hundred pounds at fifty degrees.

Under these conditions a rise in temperature to seventy-five degrees would lower the sag about four and one-fourth inches. We would advise that you fasten your wires to the truss by means of a porcelain knob insulator.

RINGING TROUBLE ON GROUNDED LINE.—(880.)

Sometimes one of our grounded lines rings all right, and then again the bells will barely tinkle. Can you tell us the trouble?

It might be poor joints between sections of wire, poor grounds, in dry earth which are, however, good enough in wet weather, or swinging grounds to trees, etc. Test for grounds first, and if you do not find the trouble to be due to them go along the line and test the joints.

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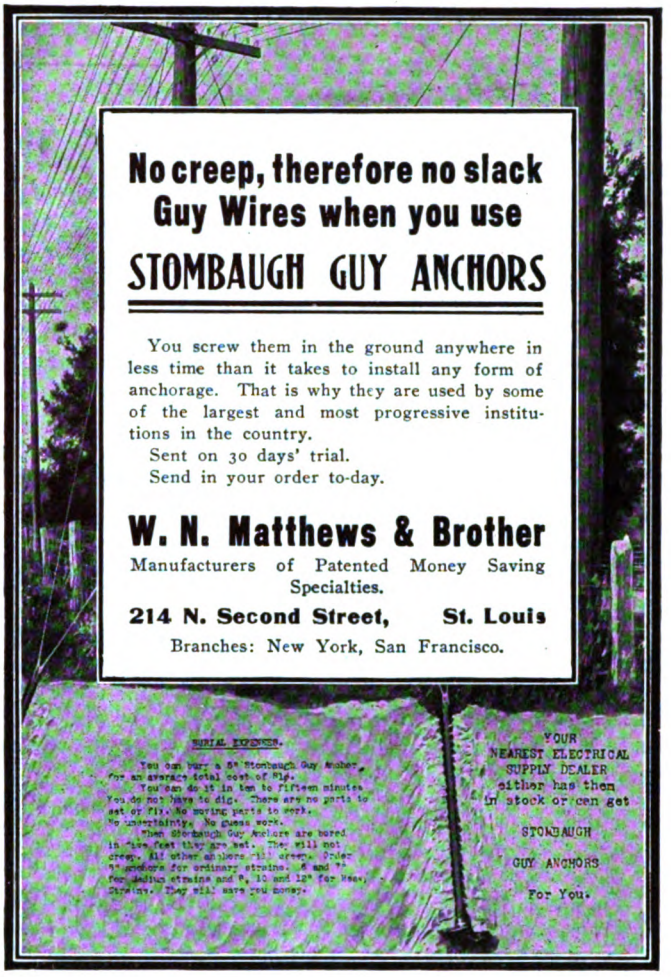
DIVIDENDS GUARANTEED

INVESTORS: The Independent Telephone Company having the most modern equipment, and one that gives to the subscriber better service than that given by the old Company that has the advantages of from ten to twenty years' operations, can guarantee satisfactory earnings and dividends.

The Wire & Telephone Company of America, of Rome, N. Y., provides the foundation and guarantees results upon which the operating Company makes its guarantee to the investor.

WATCH THIS SPACE AND WRITE FOR INFORMATION

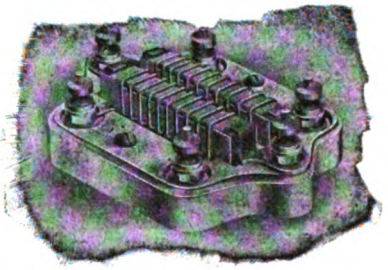


"Leave not that to chance which foresight might provide for or care prevent."

"Arrester"

IT-BEATS-THE DEVIL!

"Arrester"



Mister Lightning Never Passes the Sumter

Tel. Mfg. Co.
Sumter, S. C.

DON'T YOU WANT A BULLETIN?

"Arrester"

MASON MULTI-DISCHARGE LIGHTNING ARRESTER

Patented August 9, 1904.

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In the Field of Invention

CONDUIT TRAVELLER.

L. D. Shaffer, Paint Borough, Pa., patent 850,797, April 16, 1907.

This invention comprises an arrangement of two travellers, *A* and *B*, so arranged on the rod *C* that by proper manipulation of the ropes *A'* and *B'* the grippers *E* and *D* alternately grip against the inner walls of the conduit. Further manipulation

causes a forward movement of the traveller by the alternate advance of the grippers. The object of the apparatus is to "thread" the conduit with a rope or steel strand by means of which the cable may be drawn into the conduit.

SELECTIVE LOCK-OUT SYSTEM.

R. C. M. Hastings and T. Matheny, Athens, Ohio, patent 856,146; June 4, 1907.

This patent is descriptive of a selective lock-out system for magneto party lines. Instruments are provided with two sets of relays, aside from the ratchet impulse governor, for the purpose of locking in an unoperative position both the receiver hooks and the ringer clapper rods on all of the instruments on the line except the one with which connection is desired.

MICROPHONE.

N. H. Holland, Chicago, patent 855,458, June 4, 1907, assigned to E. A. Stolz, Chicago.

This patent describes a transmitter so constructed as to increase, in a receiver, the volume of sound to which it is subjected. It is designed particularly for the use of deaf persons in conjunction with a battery and receiver carried by the deaf person.

LINEMAN'S TEST SET.

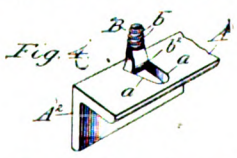
J. M. Miller and C. J. Murray, Newtown Square, Pa., patent 855,117; May 28, 1907.

The device described in this patent consists of a magneto generator, a ringer movement, an induction coil, battery, a switch, and two jacks, one for the transmitter, the other for the receiver. The entire apparatus is so connected and arranged that the lineman may signal the exchange by depressing the switch and operating the generator and by allowing the switch to return to normal, may converse with some one at the other end of the line.

METAL CROSS ARM.

H. W. Smith, Worcester, Mass., patent 848,269, March 26, 1907.

The cross arm described in this patent is formed by stamping an angle iron section of the proper length at suitable intervals, having the stamped portion extend upward and rounding the



edges so as to form the insulator pin. *A* is the angle iron, the horizontal section of which is stamped at *a* to form the pin *B*.

Suitable holes are provided in the vertical portion A^2 for securing the arm upon the pole by means of bolts in the usual manner.

AUTOMATIC CALLING DEVICE.

W. O. Beck, Chicago, patent 856,386, June 11, 1907, assigned to W. E. Co.

This patent describes a device the purpose of which is to control the impulses of current on the line of an automatic telephone system for the operation of the selector. It comprises an indicator, a set of electro-magnets and a means for opening and closing the circuit. The indicator having been set to the number desired, returns to normal position. The return movement is, however, regulated by the electro-magnets and an escapement attachment.

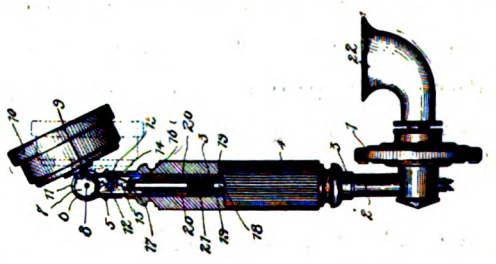
It is the purpose of the inventor to provide a calling device in which the controlling apparatus will operate at all times with a uniform speed, so that there may be no opportunity of making the wrong selection.

HAND MICRO-TELEPHONE.

A. Stromberg, Chicago, patent 854,439, May 21, 1907, assigned to S.-C. Tel. Mfg. Co.

This invention relates to a form of hand telephone having the receiver 10 and transmitter 1 mounted on opposite ends of the handle bar 4.

The particular feature which is given prominence in the patent is the construction of the means by which the switch



springs are actuated. This feature provides that under normal conditions the receiver rests at an obtuse angle with the handle bar. When placed against the ear and the transmitter brought around into position for conversation the receiver 10 moves in the joint 11, thus causing a movement of the lever 12, which in turn moves the roller 15, thus spreading the springs 19 to make contact with the springs 20. This action completes the circuit in which the telephone is included.

SPRING-JACK-MOUNTING PLATE.

H. P. Hibbard, Chicago, patent 856,955, June 11, 1907, assigned to W. E. Co.

This patent is descriptive of a mounting plate for spring jacks, having a clamping lug at each end. These lugs are formed of strips extending from the upper edges of the ends, outwardly, downwardly and inwardly back to the ends. The strips are integral with the plate ends.

ADJUSTABLE RECEIVER.

K. M. Turner, New York, N. Y., patent 855,911, June 14, 1907; assigned to General Acoustic Co.

The receiver described in this patent is constructed with a view of adjusting the loudness of tone of the receiver to the hearing powers of different deaf persons.

In the retaining case of the receiver is enclosed a turn button switch, the points of which are tapped unto various points of the windings of the receiver electro-magnets. The movement of this switch has the effect of cutting in or out certain portions of the of the windings and consequently increases or decreases the amplitude of the vibrations of the receiver diaphragm.

LIGHTNING ARRESTER.

F. B. Cook, Chicago, patent 838,304, Dec. 11, 1906.

This invention relates to the use of the customary carbon blocks, between which is placed instead of a piece of mica a dielectric of some material that will, in the case of a continued arc passing between the carbon blocks, soften and allow the blocks to come together and thus make firm contact one with the other. The dielectric has a side portion cut away approximately to the centre. This is by way of providing an opening through which small particles of carbon dust may pass so that no short circuit may result when the arc is of but short duration.

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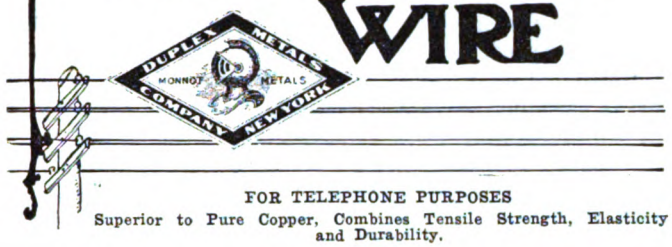
MONNOT COPPER-CLAD WIRE



FOR TELEPHONE PURPOSES
Superior to Pure Copper, Combines Tensile Strength, Elasticity and Durability.

IT COSTS LESS

than Pure Copper Wire and is superior, as it affords the non-oxidizable, acid-proof qualities of copper—combined with the tensile strength and high elastic limit of steel. This is

Monnot Copper-Glad Wire
(A Steel Wire with Non-porous, Welded Copper Coat.)

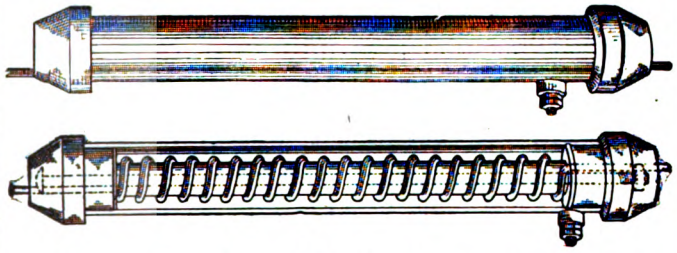
Let us send you our booklet. It tells the story.

DUPLEX METALS COMPANY
208 Fifth Avenue, New York City
WORKS AT CHESTER, PA.

Lightning Won't Travel

The succession of coils into which the fifty inches of discharge surface is built up in the

Sky Rocket Arrester

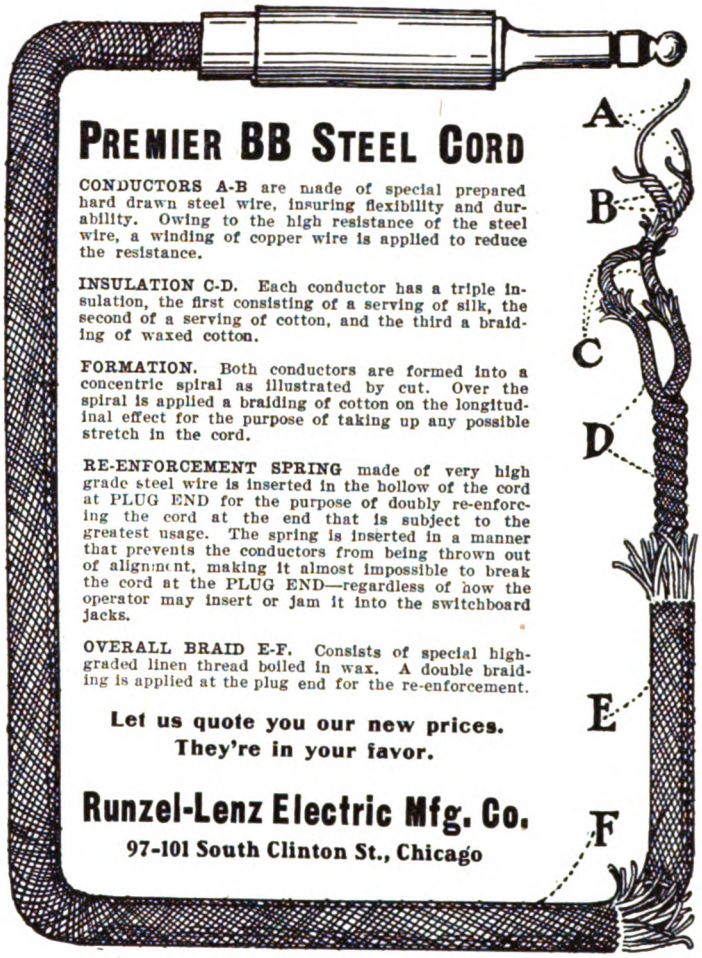


The route to ground is the shorter path and the one the lightning takes.

Saves the repair bills on telephones and switchboards.

WRITE NOW FOR A SAMPLE

CHANCE MANUFACTURING CO.
CENTRALIA, MO.



PREMIER BB STEEL CORD

CONDUCTORS A-B are made of special prepared hard drawn steel wire, insuring flexibility and durability. Owing to the high resistance of the steel wire, a winding of copper wire is applied to reduce the resistance.

INSULATION C-D. Each conductor has a triple insulation, the first consisting of a serving of silk, the second of a serving of cotton, and the third a braiding of waxed cotton.

FORMATION. Both conductors are formed into a concentric spiral as illustrated by cut. Over the spiral is applied a braiding of cotton on the longitudinal effect for the purpose of taking up any possible stretch in the cord.

RE-ENFORCEMENT SPRING made of very high grade steel wire is inserted in the hollow of the cord at PLUG END for the purpose of doubly re-enforcing the cord at the end that is subject to the greatest usage. The spring is inserted in a manner that prevents the conductors from being thrown out of alignment, making it almost impossible to break the cord at the PLUG END—regardless of how the operator may insert or jam it into the switchboard jacks.

OVERALL BRAID E-F. Consists of special high-graded linen thread boiled in wax. A double braiding is applied at the plug end for the re-enforcement.

Let us quote you our new prices.
They're in your favor.

Runzel-Lenz Electric Mfg. Co.
97-101 South Clinton St., Chicago

Do you want the best wire to be obtained for Telephone Service?

Use Roebling Hard Drawn Copper Wire

Do you want a cheaper wire which will last for years and give good service on lines of ordinary length?

Use Roebling Double Galvanized Telephone Wire

John A. Roebling's Sons Co., Trenton, N. J.

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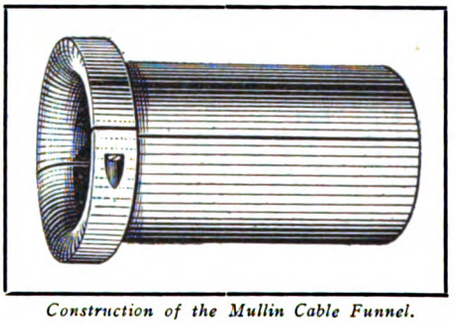
News for the Buyers

THE MULLIN CABLE FUNNEL.

WHILE cable is being pulled into ducts, it is customary to use some sort of a protective device to prevent abrasion of the lead covering against the edges of the ducts. Various appliances have been tried, but many of them are inefficient or inconvenient to carry about. The necessity for an economical and reliable protector was recognized by Mr. Mullin, and the device illustrated upon this page, he believes, will be found to work satisfactorily. As its cost is low, he states that telephone companies are laying in supplies of them to use wherever cable is being pulled in. The Colman J. Mullin Co. manufactures a great many other specialties designed for practical outside work and will be pleased to send its catalogue or any desired information upon receipt of a request mailed to its office at 430 Kent avenue, Brooklyn, N. Y.



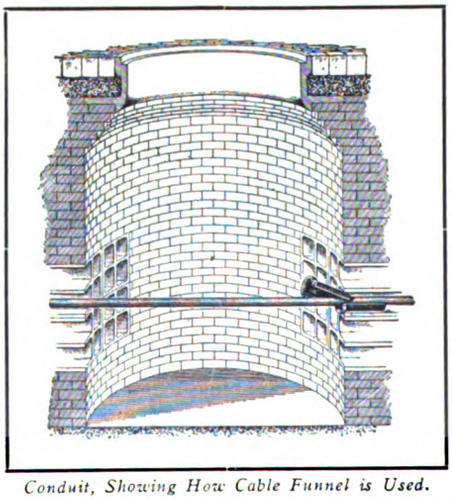
Construction of the Mullin Cable Funnel.

COMMERCIAL ELECTRICAL SUPPLY CO., St. Louis, Mo., believes that every telephone company which has not yet begun to equip its operating rooms, offices and pay station booths with electric fans ought to do so at once. It announces a good proposition on both direct current and alternating current fans on a recently issued folder, which it will be pleased to send out on receipt of a request.

THE TRUMBULL ELECTRIC MFG. COMPANY, Plainville, Conn., has just issued one of its very attractive booklets bearing the title "The Power of Persistent Effort." The pith of the story is that switch users should not be misled by persistent hammering to buy cheap material, and should investigate for themselves the features of the goods they intend to purchase. The company intends to sell the well-known Trumbull switches on their merits, and invites the intending purchaser to make the most careful inquiries.

THE VALENTINE-CLARK CO., 234 La Salle street, Chicago, Ill., is sending out a circular which gives some good points about cedar poles. Incidentally it calls attention to the fact that the company's shipping facilities are so good that it can arrange for the quickest possible deliveries, thus precluding difficulties arising from holding up construction to await the receipt of poles.

UNIVERSAL POLE AND POST PRESERVING CO., Circleville, O., has prepared a booklet containing an article on decay in poles, by Dr. Howard Jones. This gives a number of very interesting facts about the process of decay in wood. Copies may be obtained, without charge, by writing to the company.



Conduit, Showing How Cable Funnel is Used.

ROCHESTER SEWER PIPE CO., 545 Oak street, Rochester, N. Y., is sending out some very interesting cards about conduits, most of them telling some of the qualities a good conduit should have.

AMERICAN CONDUIT COMPANY, 140 Nassau street, New York, has issued four bulletins bearing the numbers 215, 217, 220 and 223, which should be in the hands of every telephone man who has to install conduits enclosed in concrete, or in fact for any concrete work. These bulletins are in the shape of small cards, bearing curves worked out to show respectively the cost of stone, cement, sand and labor per cubic yard of concrete. Directions for use are also printed on the same card.

The company states that it is frequently asked "What does it cost to lay conduits?" If a company installing conduits expects to enclose them in concrete these bulletins will enable it to exactly determine the cost of the work. They are equally good for estimating the cost of concrete for use in foundations, or almost any other type of concrete work. Requests for them have been received from all over the country, and even from places as far away as China.

DURANT ELECTRIC SUPPLIES CO., 56 Fifth avenue, Chicago, Ill., is sending out cards giving prices on its "Ironite" duplex drop wire, a twin B. B. iron wire with rubber covering and 5-32" insulating compound, the whole surrounded by a twisted braid.

EVERSTICK ANCHOR CO., 17 South Main street, St. Louis, Mo., has prepared a folder giving testimonials as to the efficiency of its anchors from a number of well known telephone companies. A number of interesting points about anchors are included in the sheet, which will be sent to all interested persons.

BELDEN MFG. CO., 194 Michigan street, Chicago, Ill., in its catalogue No. 3 lists a great variety of wire, including German silver resistance wire, which can be used in making various classes of testing apparatus, telephone switchboard wire and jumper wire, self-fluxing solders and a full line of cord for switchboard and instrument connections. Cotton sleeving for insulating short strands of bare wire used in switchboards and instruments and various other specialties are also described. In addition to the information about the specialties sold by the company, a number of useful tables are included.

JOHN RUSCOE & CO., LTD., Manchester, England, manufacture a cable reel carriage which presents an especially sturdy appearance, being apparently designed to bear without possibility of breakdown the load of the very largest reels used. It is a two-wheeled vehicle, arranged to facilitate loading and unloading, as well as the unreeling of cable. It is claimed that its use has so reduced the cost of labor for these items that it is being generally adopted by municipal corporations and prominent contractors in Great Britain.

EWING-MERKLE ELECTRIC CO., St. Louis, Mo., is sending out folders which show how the "Gyrofan" is adapted to its object of maintaining a first class circulation of air. The company recommends it for use in operating rooms, offices and also pay station booths. Those who are interested should write for the information embodied in a recently issued circular without delay, as this is the season of rush orders.

JULIUS ANDRAE & SONS CO., 99 West Water street, Milwaukee, Wis., has prepared a folder showing the three steps necessary for setting the Hercules Anchor and they also indicate the reason why the strain-resisting power of this anchor is so great. Copies of the booklet may be obtained by writing to the company.

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National Pole Company

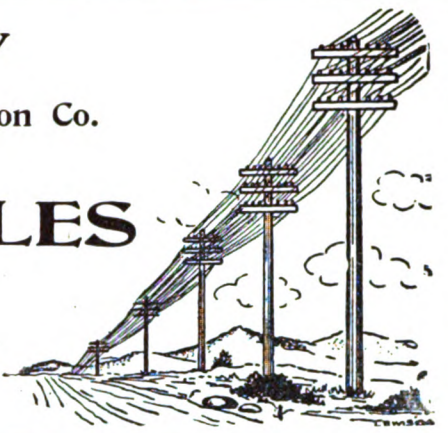
SUCCESSOR TO

Cedar Department of Pittsburg and Lake Superior Iron Co.

ESCANABA, MICH.

LARGE STOCKS OF POLES

Yards from
Maine to Washington



MICHIGAN WHITE CEDAR POLES

We have a large stock of White Cedar Poles of all sizes, concentrated at a point on the D. & M. R. R. in lower Michigan, from which we can make prompt deliveries. The location of this stock offers exceptional facilities for shipments to all points in Ohio, Indiana, Southern Michigan and the Eastern States. Write us for delivered prices on any size for immediate shipment.

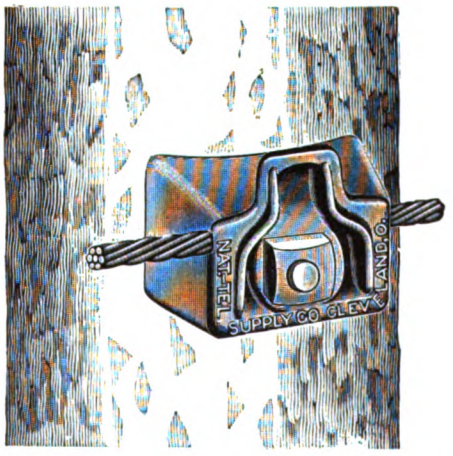
KELLOGG SWITCHBOARD & SUPPLY CO.

CHICAGO, ILL.

That advertiser has much to learn who is deterred from advertising in a medium because he does not like its policy—its religion or its politics.—*Printers' Ink.*

Non-Breakable Messengers

HANGERS



HOT GALVANIZED

No experiment. They have been tried out and are being used to-day in all parts of the United States and Canada.

National Telephone Supply Co.

3923 Superior Avenue, Cleveland

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Good News—and It's All New

NEW COMPANIES.

ROCK GROVE, ILL.—The Rock Grove Farmers' Mutual Telephone Company, Rock Grove, has been incorporated with a capital stock of $1,200. Among the incorporators are L. E. Rote, William Fisher, Martin Brobst.

AUGUSTA, KAN.—An Independent telephone company has been formed at this city by Augusta, Rose Hill, Haverhill and Whitewater men, whose intention it is to build a line from Augusta to Wichita. It has a capital stock of $5,000, and those having an active interest in the corporation are J. A. Weaver, J. W. Brown, T. B. Salter, J. E. Dilts, Charles Thompson, W. Sowers, A. G. Lamb, W. H. Kennedy and Geo. M. Pickrell. A charter is to be secured by the new company and work on the line commenced at once.

IRVINE, KY.—The Irvine Telephone Company has been organized with a capital stock of $2,000, and articles of incorporation are to be filed at once. The officers of the company are Thomas Williams, president; Jas. A. Wallace, vice president; Hugh Riddell, secretary; O. W. Witt, treasurer Others interested in the new enterprise are J. C. Potts, A. M. Burbin, Robt. R. Friend, F. R. Davidson, E. F. Davidson, C. W. Sale, C. Marcum, J. P. Miller, C. T. Grinstead and W. P. Williams. An exchange is to be installed at Irvine, and lines built into the surrounding country.

JACKSON, MISS.—The Independent Home Telephone Company, for which Mr. N. F. Smith recently secured a franchise, has been incorporated with a capital stock of $200,000.

CIMARRON, N. M.—Articles of incorporation have been filed by the Cimarron Valley Telephone Company. It has an authorized capital stock of $100,000, and the incorporators are Charles Springer, Geo. E. Remley, Frederick Whitney, all of Cimarron. Its principal place of business is to be at Cimarron, and its period of existence is fixed at fifty years.

BARRYVILLE, N. Y.—Articles of incorporation have been filed by the Empire & Keystone Telephone Company. It has an authorized capital stock of $10,000, and the directors are A. A. Calkin, Monticello; E. R. Kalbfus, Schohola, Pa., and F. F. Freeman, Barryville.

COGSWELL, N. D.—The Cogswell Rural Telephone Company has been incorporated with a capital stock of $2,500, and the incorporators are F. F. Pollock, B. R. Fulton, L. E. Cole, R. G. McCray, of Cogswell, and W. S. Jeffries, of Harlem, N. D.

EL RENO, OKLA.—The Midland Telephone Company of El Reno has filed articles of incorporation. The capital stock is placed at $2,500, and the incorporators are Elmer N. King, D. Rinderhagan and Allen Crumpacker.

SOLON, OKLA.—The Solon Telephone Company, with a capital stock of $1,000, has filed articles of incorporation, and has elected the following directors: A. C. Barthick, W. T. Hangate, C. Pittman, all of Solon.

BLUNT, S. D.—A new Independent telephone company, to be known as the Peoples Telephone Company, has been incorporated, and contemplates the installation of an exchange at Blunt, and the erection of rural lines. The capital stock is given at $25,000, and the incorporators are C. E. Granger, J. A. Howard, J. H. Dowing, H. Persson and W. W. Waite.

NEWPORT, VA.—An Independent telephone company is being organized at this city, whose intention it is to establish a local system and to build lines to Hampton, Phoebus and other points. John W. Rowe is actively interested in the new enterprise, and a considerable amount of stock has already been subscribed.

BRUCE, WIS.—An Independent telephone company, to be known as the Murray Farmers' Telephone Company, has been formed to operate a telephone system in Bruce. It has a capital stock of $5,000, and among those interested are B. F. Brainerd, F. S. McKean and E. F. Brainerd.

HERTEL, WIS.—A Farmers' telephone company has been formed by the farmers living between Hertel and Shell Lake, whose intention it is to construct a line between the two points. Mr. Allen has been elected president; E. Toll, treasurer, and Owen Patnaude, secretary.

WEYERHAUSER, WIS.—Articles of incorporation have been filed by the Weyerhauser and Island Lake Telephone Company, and the following directors elected: E. J. Erickson, J. C. Stubbs, G. G. Muckle, J. Cox and W. C. Dale.

DIDSBURY, ALB., CAN.—The farmers between Didsbury and Kansas, Alberta, Can., have organized an Independent telephone company, which contemplates the installation of a rural telephone system in Alberta, which will be the first system of the kind to be installed in this city. Address G. B. Sexsmith, Didsbury, Alb.

WARMAN, SASK., CAN.—The Warman Electric Light and Power Company has been formed for the purpose of constructing a telephone system in this city. The directors of the new company are J. McGill, F. C. Harrington, M. L. Strickland and H. Goodall.

FRANCHISES.

BERLIN, N. H.—The recently organized Southern Coos Telephone Company, of Colebrook, N. H., has applied for a franchise to construct a telephone system in Berlin.

WESTMINSTER, B. C., CAN.—Permission to enter this city and install a telephone system has been granted to the Burnaby & Coquitlam Telephone Company.

FINANCIAL.

McDOWELL, MO.—The capital stock of the Barry County Mutual Telephone Company has been increased from $500 to $10,000.

HOOSICK FALLS, N. Y.—The Eastern New York Telephone & Telegraph Company has declared its semi-annual dividend of 3 per cent, payable August 1st to all stockholders of record June 15th.

CLEVELAND, O.—The directors of the United States and Cuyahoga Telephone Companies at the annual meeting decided to hold a stockholders' meeting on July 22nd to vote an increase of $500,000 in the common stock, in order to allow for a treasury bond issue of that amount.

GEORGETOWN, O.—The Brown County Independent Telephone Company has increased its capital stock from $10,000 to $20,000.

MANITOWOC, WIS.—The Rapids & Western Telephone Company, Rapids (P. O. address Manitowoc), has increased its capital stock from $500 to $3,500.

ELECTIONS.

PIGGOTT, ARK.—The following officers have been elected by the Home Telephone Company of Piggott: President, J. K. Browning; secretary and treasurer, J. R. Sourlock. The directors are: W. R. Mebane, A. J. Stokes, G. W. Sanders, J. K. Browning, H. W. Moore and J. R. Sourlock.

OAKLAND, CAL.—The directors of the Home Telephone Company are William Thomas, William L. Gerstle, Thomas H. Sparhurst, L. S. Ackerman, J. E. Schonseld, L. Webster and J. Robinson.

BLUFFTON, IND.—The German Telephone Company has elected the following officers: John Barger, president; William Benika, vice-president; D. C. Huffman, secretary; Robert Stewart, treasurer; Jesse Stoneburner, manager.

ALEDO, ILL.—The officers of the People's Telephone Company are: M. G. Reynolds, president; Wilson P. Zentmore, vice-president; William McManus, secretary. The directors are W. K. Wells, L. N. Lewis, J. Alfred Johnson, George Bell, all of Aledo.

FREEBURG, ILL.—The following comprise the officers of the Twelve Mile Prairie Telephone Company: President, C. T. Stookey; vice-president, W. H. Hill; secretary, A. M. Carr; treasurer, Warren Hamill; board of managers, T. A. Carr, William Zeilmann and A. L. Carr.

TREMONT, ILL.—At a recent meeting of the Tazewell County Telephone Company the following officers were elected: President, R. L. Schmutz, of Tremont; vice-president, Fred Reuling, of Morton; general manager, William Moschel, of Morton; secretary and treasurer, G. E. Bird, of Tremont; assistant manager, John Getz, of Tremont.

CORYDON, IND.—The following officers and directors have been elected by the Eureka Telephone Company: President, E. F. Windell; vice-president, W. H. P. Wiseman; secretary, H. P. Beanblossom; treasurer, H. C. Hays; directors, David Shaffer, Wood Yeager, J. L. Windell, D. C. Davis and D. P. Stonecipher.

EUCLID, MINN.—The following officers have been elected by the Euclid Telephone Company: J. S. Chapin, president; Gerret Smith, vice president; F. Mitchell, secretary and treasurer; Peter Stuhr, Paul Useldinger, August Weiland, directors.

ST. PETER, MINN.—The Nicollett Co. Telephone Company has elected the following officers: M. B. Johnson, president; C. Amundson, vice president; G. F. Merritt, secretary; F. M. Donahower, treasurer; C. C. Nelson, general manager; C. W. Carpenter, assistant manager.

WINONA, MINN.—The following are the officers and directors of the Interstate Telephone Company: President, James A. Tawney; vice president, P. E. Baumgartner; secretary and treasurer, Otto Troost; directors, Edward Lees and John Dietze.

ST. JOSEPH, MO.—At a meeting of the Citizens Telephone Company the following directors were named: Walter S. Dickey, Kansas City; W. F.

WANTED—SPECIAL CORRESPONDENTS

OWING to the rapid growth of the Independent telephone movement in all sections of the country, we have openings for special correspondents in every State to work in conjunction with our already efficient corps. Matter similar to that in our Message and Operating Field pages is especially desired. For details address the Editor.

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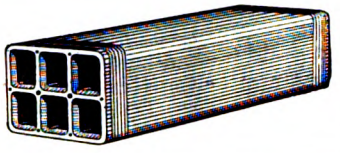

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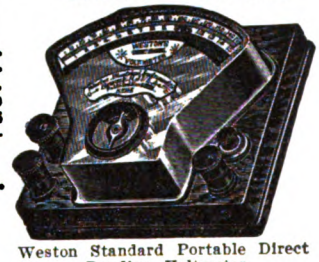

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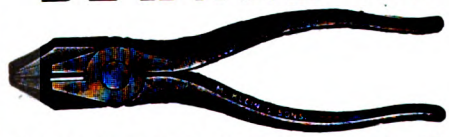

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Good News—And It's All New

Rankin, Tarkio; Gen. A. A. Goddard, Topeka, Kan., and Theo. Gary, Macon.

LEBANON, N. J.—The officers of the Lebanon Telephone Company are: S. J. Shurtz, president and treasurer; George Clark, vice-president; E. W. Sutton, general manager; O. A. Farley, secretary.

SILVER CITY, NEW MEXICO.—The following officers have been elected by the Grant County Telephone Company: W. D. Murray, president; J. W. Bible, vice president; Clyde Smith, secretary, treasurer and general manager. This company has recently entered into a contract with the government to build a metallic circuit line from its sub-station at Pinos Altos across the Gila National Forest Reserve to the mining camps of Mogollon, Cooney and Alma, New Mexico, a distance of ninety miles.

SILVER CITY, NEW MEXICO.—The Silver City, El Paso and Southwest Telephone Company has elected the following officers: W. D. Murray, Central, N. M., president; John H. Morgan, El Paso, Tex., general manager; Clyde Smith, Silver City, N. M., secretary and treasurer.

PENN YAN, N. Y.—The newly-elected officers of the Yates County Telephone & Telegraph Company are Charles E. Guile, president; Walter B. Tower, vice-president; Frank C. Spencer, secretary; David Miller, treasurer.

SCHENECTADY, N. Y.—The following officers have been elected by the Schenectady Home Telephone Company: Charles F. Veeder, president; I. H. Griswold, vice-president; E. S. Kellogg, treasurer; J. T. Bellanger, secretary and manager.

RAVENNA, N. Y.—The officers for the Ravenna & Medway Telephone Company are: President, William C. Harden; vice-president, Arthur Hartt; secretary, Ernest L. Haight; construction manager, Clifton Bedell; treasurer, Harrie McK. Curtis.

GERMANTOWN, O.—At a meeting of the stockholders of the Germantown Telephone Company the following directors were elected: John C. Schaeffer, C. W. Hildabolt, Chas. T. Emminger, John Pflinspach and Geo. I. Coleman.

NORWALK, O.—The following officers and directors have been elected by the Oil Belt Telephone Company: L. H. McDonald, president; W. W. Graham, vice president; H. E. Graham, secretary and treasurer; H. E. Graham, L. H. McDonald, W. W. Graham, E. N. Graham and J. R. McKnight, directors.

STRAWBERRY RIDGE, PA.—The People's Telephone Company at its meeting at this city elected Charles F. Bomboy, president; Dr. J. E. Shuman, vice-president; R. A. Cox, secretary; A. W. Lowery, treasurer. Directors are Levi Ortner, Miles Derr, S. S. Peeling, Boyd Trescott, B. C. Dunham, S. C. Hartman, Charles Shires, Lloyd Bomboy and Allison Essick.

WASHTUCNA, WASH.—The Ritzville, Washtucna High-Line Telephone Company has elected the following officers: President, William Snyder, Ritzville; secretary, O. Leonard, Bemis; treasurer, E. H. Herring, Bemis.

ST. MARTINS, N. B., CANADA.—At a recent meeting of the shareholders of the St. Martins Telephone Company, the following officers and directors were elected: C. M. Bostwick, president; W. E. Skillen, vice-president; W. M. Jarvis, R. O. Stockton and C. D. Trueman, directors.

MISCELLANEOUS.

SAN FRANCISCO, CAL.—Amended articles of incorporation have been filed by the Direct Line Telephone Company, and the following directors elected: Joseph A. Stulz, C. F. Runyon, Julius Fay, Robert Capelle, G. W. Emmons, A. K. Andriano and William B. Pringle. Wires are to be placed by the company along every street in San Francisco.

ARCOLA, ILL.—The incorporators of the Aerial Transit & Telephone Company are Henry McCabe, Arcola, Ill.; T. L. Galbreath, Charleston, Ill., and Frank Osborne, of Pinesboro, Ill.

SUMNER, IOWA.—The entire property of the Sumner Telephone Company is now owned by E. A. Hurmence. The system is valued at $160,000, and it is the new owner's intention to greatly enlarge and improve the plant.

CASS CITY, MICH.—A bill has been passed by which the Cass City council is allowed to expend $3,500 for the purchase of a telephone plant. If more money is necessary bonds may be issued on vote of two-thirds of the people.

HIGGINSPORT, O.—The officers of the newly organized Higginsport Independent Telephone Company are: President of stockholders, Dr. Wesley Love; president of board of directors, Oscar C. Ellis; vice president, J. H. Neu; secretary, C. B. Williams; treasurer, M. H. Shinkle; manager, D. C. Warner.

SHERMAN, TEXAS.—The North Texas Telephone Co., of Sherman, Texas, has leased the property of the Phoenix Telephone Co., which owns an iron circuit toll line between Honey Grove and Sherman. It will string a No. 10 copper line, which will complete the copper circuit from Texarkana to Fort Worth and Dallas.

WEST, TEXAS.—The Home Telephone Co., of West and Abbot, Texas, is installing a large amount of new work since its reorganization, when J. B. Earle, of Waco, and his associates purchased a half interest in the property and Mr. Earle was made general manager.

FORT SASKATCHEWAN, ALB., CAN.—The long distance telephone line running from this city to Edmonton, formerly owned by the latter city, has been taken over by the provincial government, and will be rebuilt. Address S. Edwards, provincial telephone expert, Edmonton, Alb.

PERSONAL.

ROBERT BLACK has been promoted to the position of manager of the Home Telephone Company of Hattiesburg, Miss.

W. C. MOORE has been appointed manager of the Gainesboro Telephone Company's exchange at Somerset, Ky.

W. B. TOMPKINS has recently been made assistant managerof the Home Telephone Company at Quincy, Ill.

With the Builders

WALDRON, ARK.—A line from Waldron to Hon has been erected by the Waldron Telephone Company.

LOS ANGELES, CAL.—The Southern Telephone and Electric Company is considering the advisability of establishing long distance connections between Los Angeles and Bisbee, Ariz.

NEWARK, ILL.—It is the intention of the Farmers & Merchants Telephone Company to construct a number of new lines.

LA PORTE, IND.—A new exchange is being installed by the La Porte Telephone Company at Rolling Prairie.

MARTINSBURG, IND.—The line between Martinsburg and Pekin is being reconstructed by the Hoosier Telephone Company.

CHINA, ME.—The China Telephone Company is extending its lines into the eastern part of Kennebec county, and is also building a line between Weeks Mills and South China.

BAY CITY, MICH.—The Valley Telephone Company, which is to build a new exchange building at Saginaw, expects to erect a building for its own use in this city also.

JACKSON, MICH.—Among the improvements in its system being made by the Citizens' Telephone Company is the construction of a new toll line from Tompkins to Jackson.

DUNDAS, MINN.—The Dundas Rural Telephone Company is extending its system to Millersburg and points west of that city.

MONTEVIDEO, MINN.—It is the intention of the Citizens' Telephone Co. to build a new line to Hagan.

WASECA, MINN.—The plant of the Waseca Telephone Company is being enlarged.

LEWISTOWN, MONT.—It is the intention of the Lewistown-Billings Mutual Telephone Company to extend its lines from Moore to Harlowton. Later on the company expects to connect with Big Timber, greatly increasing its long distance connections.

CHERRY VALLEY, N. Y.—The lines of the Independent Telephone Company are being extended from Cherry Valley to Sharon Springs.

NORTH PERRY, N. Y.—The lines of the Forest Telegraph and Telephone Company between North Perry and Eastport are being rebuilt, and it is the intention of the company to rebuild its system between Eastport and Calais.

HOOSICK FALLS, N. Y.—Among the improvements planned by the Eastern New York Telephone & Telegraph Company is the building of a line through White Creek.

ELLENDALE, N. D.—A new exchange is to be installed at Ellendale by the Farmers' Telephone Company.

BOXELDER, TEXAS.—The Clarksville & Texarkana Telephone Company has established a new exchange at this city, and contemplates other improvements in its system.

EL PASO, TEXAS.—The Mountain Valley Mining & Telephone Company is building a telephone line from El Paso through the western part of Mexico down to the Guaynopa district and to Medera. It is its intention to establish local exchanges at Colonia Dublan and Nueva Casas Grandes.

SAN ANGELO, TEXAS.—Many improvements in the local telephone system at San Angelo, which is owned by Messrs. Rust Bros., are being made.

GILBERT, W. VA.—Lines from Gilbert to Christian are being constructed by the Gilbert Telephone Company.

REVELSTOKE, B. C., CAN.—The Revelstoke, Trout Lake and Big Bend Telephone Company is arranging for the construction of several long distance telephone lines. Address W. Cowan, manager, Revelstoke.

MORDEN, MAN., CAN.—The Louise Telephone Co. is planning for the erection of a long distance line from Crystal City to Snowflake, approximately eighteen miles.

WINNIPEG, MAN., CAN.—It is the intention of the Lac du Bois power plant to construct a telephone line from its plant to Winnipeg, a distance of seventy-five miles. Address C. B. Smith, Carnegie Library Building, Winnipeg, Man.

UNDERGROUND.

CAMDEN, N. J.—Permission has been granted to the Eastern Telephone & Telegraph Company to place its wires underground in certain streets in Camden.

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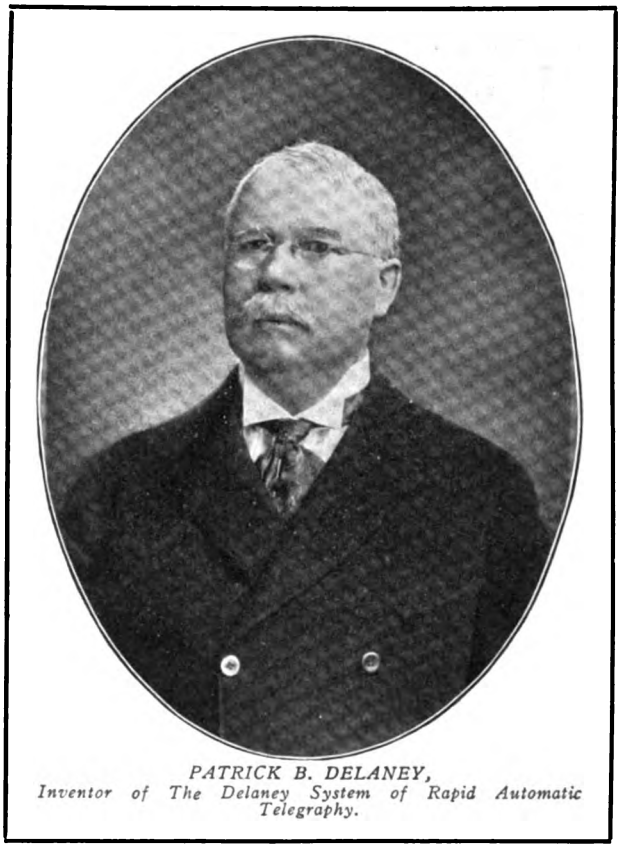
Long continued use and actual commercial work under all kinds of conditions have demonstrated conclusively that the Delany system is highly practical, thoroughly practicable and soundly commercial. Its economic energy is proved by the fact that it gets as great service from one wire as the Morse companies get from seventeen with the aid of the quadruplex, or from twenty-seven with the duplex, or from sixty-six when they have to depend upon the Morse simplex, as they do for 99 per cent of their service. The Delany system works undisturbed in all weathers, even when the other methods are completely out of commission.

The Telepost Company will carry the 50-word telepost or the 25-word telegram between any two of its offices for 25 cents. One price everywhere and anywhere in the United States.

The Delany system works over telephone circuits without the slightest interference with the latter form of service.

For the telephone companies not to get a profit from the telegraphic use of their wires would be shortsighted. To get any but the largest possible would be poor business. The Telepost Company can and will yield a larger return to the telephone companies than either of the telegraph companies could afford to give, or than the telephone companies themselves could earn by doing a telegraph business with any of the methods open to them.



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Hon. John W. Goff, New York, Judge of the Supreme Court; S. S. McClure, New York, editor and founder of *McClure's Magazine;* H. D. Critchfield, Milwaukee, Wis., president Milwaukee Independent Telephone Company; F. W. Shumaker, New York, treasurer Sterling Debenture Corporation; H. Lee Sellers, New York, secretary R. H. Sellers Company.

It will require the concurrent vote of all five to sell any of the rights, patents or other properties of the company. The Lincoln Trust Company, of New York City, acting as the agent of the above voting trust, will issue to the purchasers of stock its negotiable receipts, equivalent to the actual stock in every particular, excepting the right to vote.

The Board of Directors, as thus far made up, consists of:

Captain W. J. Barnette, U. S. N., Washington, D. C., General Board Navy Department; A. K. Brown, Chicago, Ill., president Kenwood Trust & Savings Bank, Chicago, Ill.; John M. Carrere, New York, Carrere & Hastings, Architects; Thomas Conyngton, New York, Conyngton & Harrison, Attorneys; H. D. Critchfield, Milwaukee, Wis., president Milwaukee Independent Telephone Company; R. H. Sellers, H. Lee Sellers, New York; C. H. Silliman, New York, founder Land Mortgage Bank of Texas, Ltd.; Hon. Wilson H. Fairbank, Warren, Mass., ex-Senator Massachusetts.

The Sterling Debenture Corporation, Brunswick Building, Madison Square, New York, whose officers are wide-awake men with reputations of long standing for the highest integrity and ability, are to co-operate with us and will have the exclusive handling of the shares offered for sale. They will furnish sufficient funds to build an installation that will put the Telepost Company on a paying basis from the start and lead to its rapid extension.

We feel that it is due to the Telepost, to you and to ourselves, that we lay our plans first before you. In our arrangements with the Sterling Debenture Corporation we stipulated that no stock should be offered to their customers until we had reached as many as possible of the officers and shareholders of the Independents and given them an opportunity to secure as much of the Telepost as they cared to own.

This is not, however, in any sense a solicitation to you to buy stock of the Telepost Company. Every share the Sterling Debenture Corporation offers for sale will find a ready purchaser among their many customers; but we tell you frankly that we hope every available share offered will be taken by the Independents, and that you and we shall own the Telepost.

Our object in this announcement is simply to lay everything before you, as is due you, considering our many mutual interests and possibilities, so that no one can ever say that we had passed over members of the same family and made the first offer to strangers.

Mr. Delany's and our long desired plan of giving to and preserving for the American public a telegraph service worthy the name and the nation is now to be consummated, and we are seeking to make our first announcements to you, our allies, in the Independent field.

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Vol. 15 NEW YORK—JUNE 29, 1907—CHICAGO Number 26

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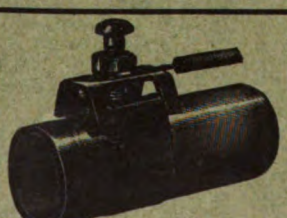
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With No Trouble At All

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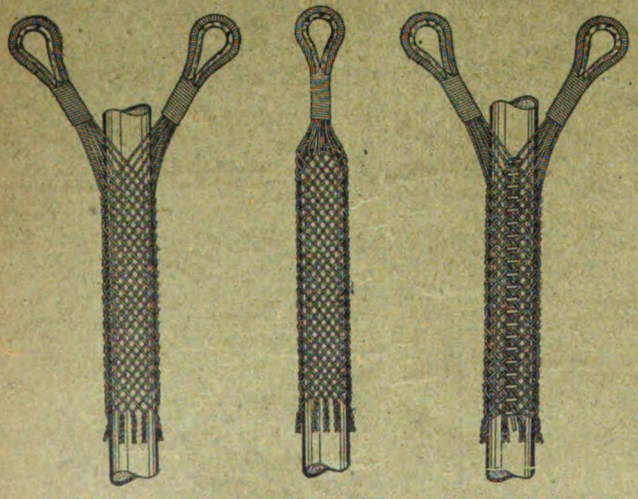

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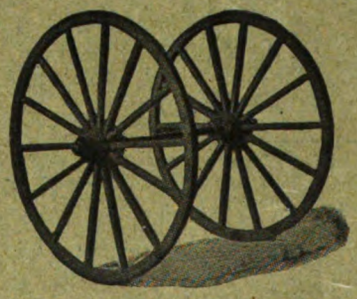

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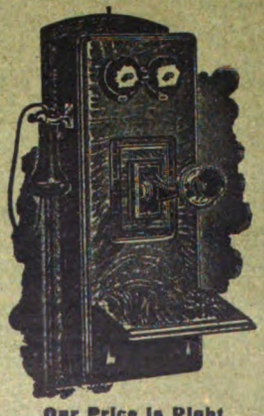

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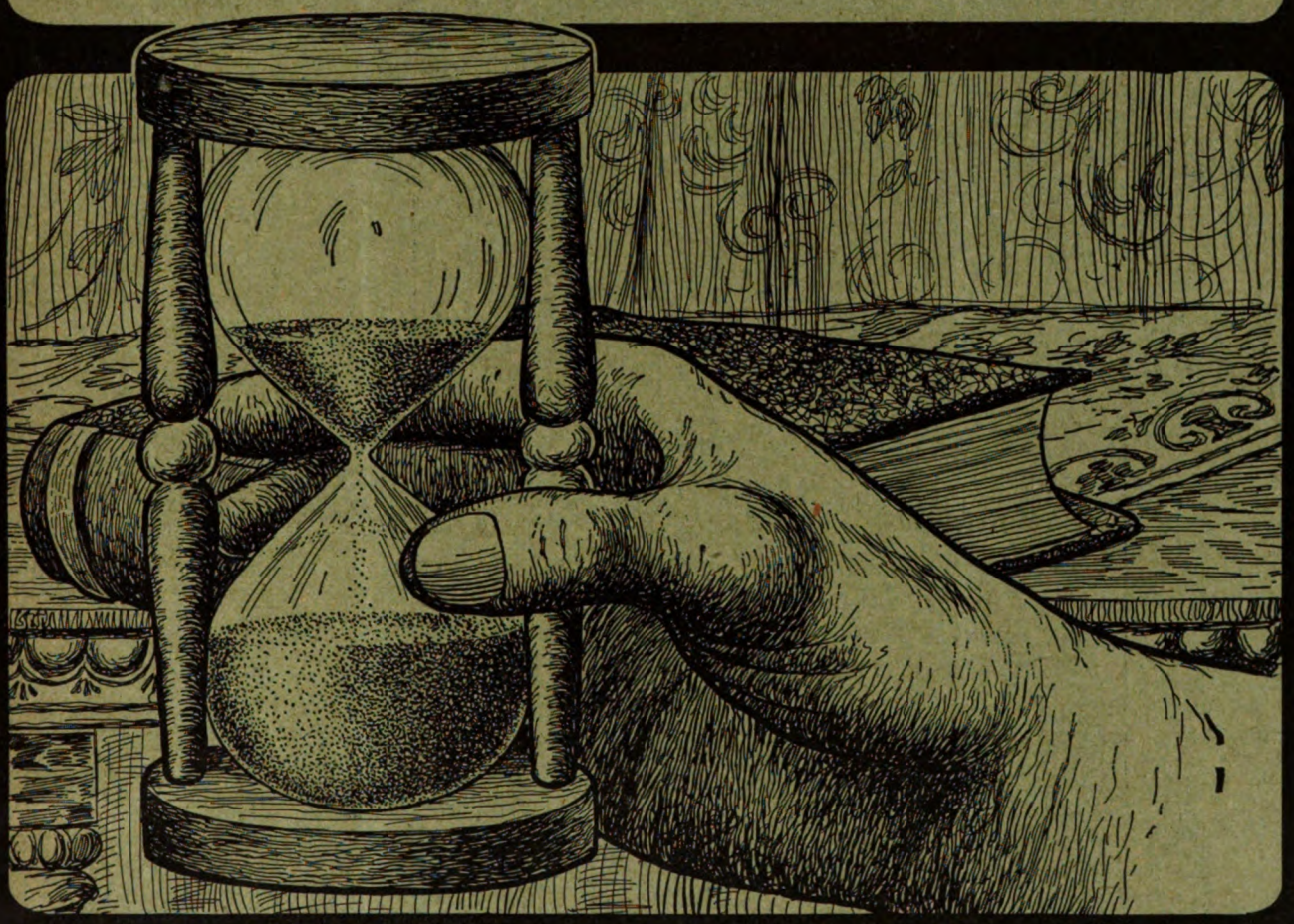

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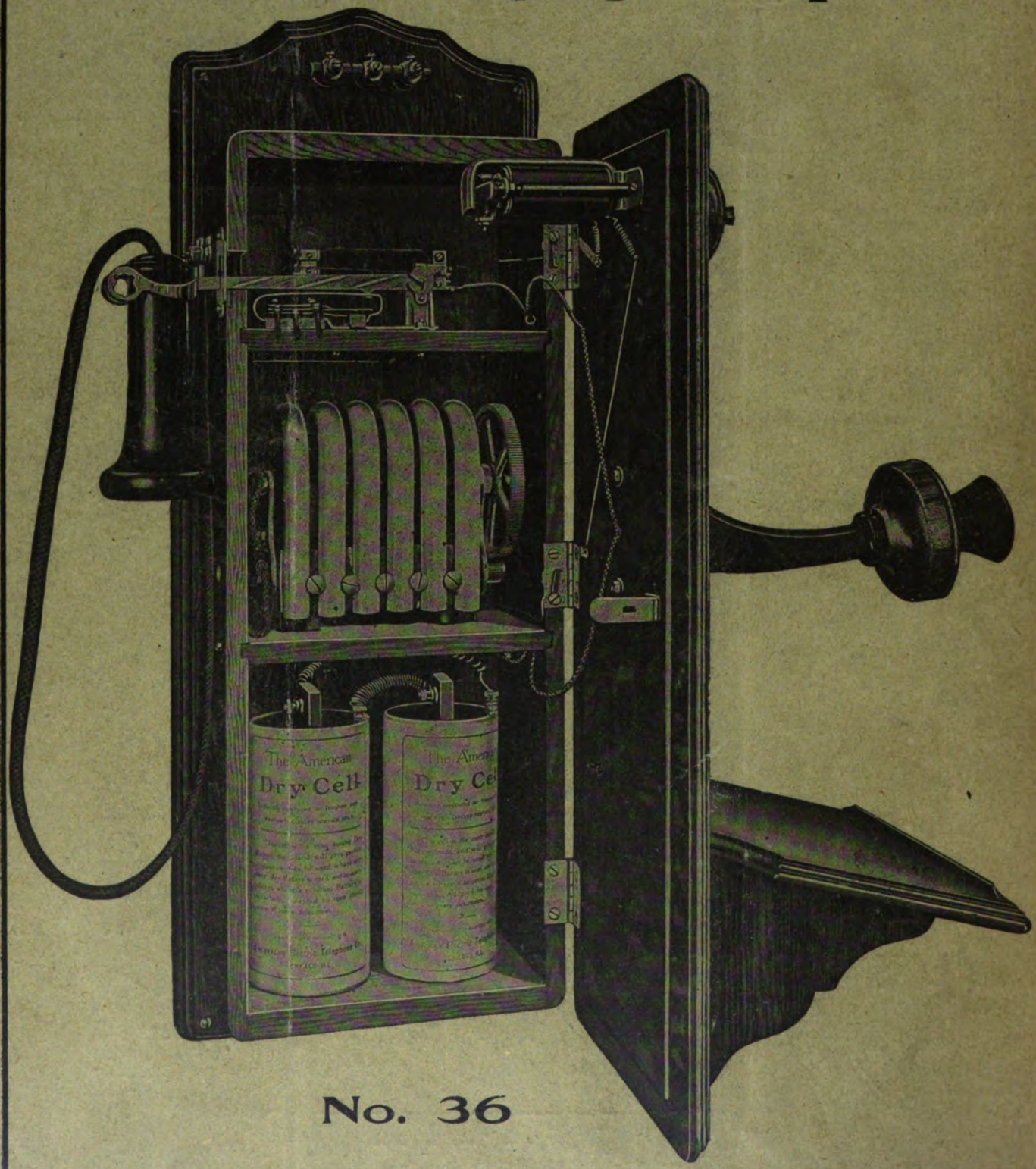

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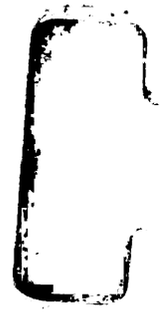

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